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NATIONAL DAM INSPECTION PROGRAM. JEANNETTE DAM (NDSI.D.-PA-0048--ETC(U)

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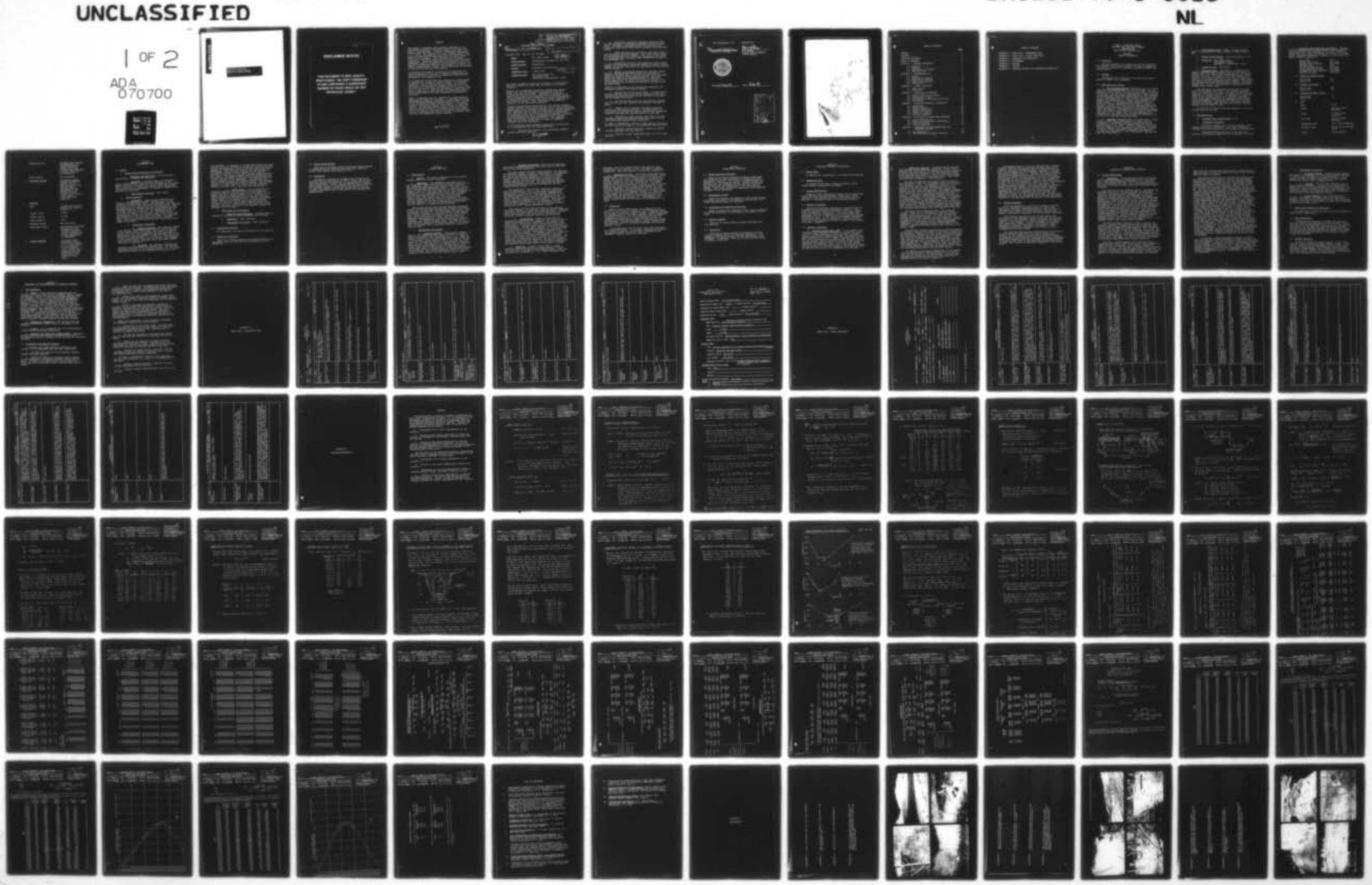

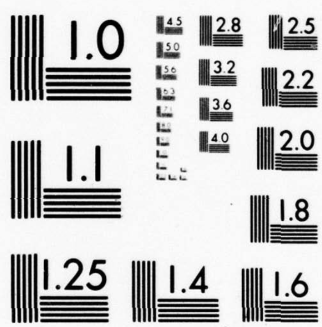

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PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D. C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The spillway design flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition, and the downstream damage potential.

411002

National Dam Inspection Program. Jeannette Dam (NDS-PA-00486), (Pennder-65-9), Ohio River Basin, ~~Unnamed~~ Tributary to Brush Creek, Westmoreland County, Pennsylvania.

Phase I Inspection Report.

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PHASE I REPORT
NATIONAL DAM INSPECTION PROGRAM

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ABSTRACT

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Jeannette Dam: NDS I.D. No. PA-00486

Owner:	Mrs. Helen Indyk
State Located:	Pennsylvania (PennDER I.D. No. 65-9)
County Located:	Westmoreland
Stream:	Tributary of Brush Creek
Inspection Date:	9 March 1979
Inspection Team:	GAI Consultants, Inc. 570 Beatty Road Monroeville, Pennsylvania 15146

11 Apr 79

The visual inspection, operational history, and hydrologic/hydraulic analysis indicate that the facility is in poor condition.

Based on the recommended guidelines, the Spillway Design Flood (SDF) for this facility is considered to be the Probable Maximum Flood (PMF). Hydrologic and hydraulic calculations indicate that the facility, as observed at the time of inspection, will accommodate a flood of approximately 60 percent PMF by virtue of the severely eroded condition of the diversion channel. Thus, the spillway is deemed inadequate, but not seriously inadequate.

Structural deficiencies associated with the serious spillway erosion, however, are of such a nature that if left uncorrected could result in the failure of the dam, prior to being overtopped, with subsequent loss of life and substantial property damage. Thus, the facility, as observed at the time of inspection, is considered unsafe and in an emergency condition. A meeting was subsequently held among representatives of PennDER, Corps of Engineers (Pittsburgh District), the inspection team, and the owner during which a course of temporary remedial action was discussed.

To alleviate the unsafe emergency condition of the facility, it is recommended that the owner immediately:

a. Draw down the reservoir until permanent remedial repairs have been completed.

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b. Immediately develop an emergency warning system for the protection of downstream residents should the need arise. Included in the system should be provisions for around-the-clock surveillance during unusually heavy precipitation.

c. Remove entirely the old masonry drop-inlet structure located at the left abutment. The inlet conduit should be disconnected prior to removal of the spillway and sealed at all exposed ends (including those observed in the hole at the downstream toe).

d. Temporarily backfill (with adequately sized, well-graded rock) the present discharge channel to restore lateral support to the area just below the downstream toe and preclude further erosion.

e. Retain a registered professional engineer experienced in the design and construction of earth dams to perform a detailed study of the facility and more accurately assess the capacity of the spillway system. The owner should then make required modifications, in addition to those listed below, to ensure the structural integrity of the embankment and the hydrologic/hydraulic adequacy of the spillway system.

Items to be considered in the engineering assessment and subsequent remedial work should include:

f. Restoration of the outlet works. Included should be provisions for valving the outlet conduits at both the upstream and downstream ends and for renovating and repairing the present gate house.

g. Filling the large hole at the downstream embankment toe near the left abutment and restoring the area to grade.

h. Removal of all materials and debris currently obstructing the diversion channel. Included should be provisions for clearing the culvert beneath the concessions stand and restoring the breached section of the dike.

i. Clearing all brush, debris, and litter from the embankment slopes and immediate downstream area to arrest root growth and enhance future inspection.

In order to subsequently maintain a safe operating status at the facility at all times, it is recommended that the owner:

j. Develop a manual outlining a program of regular routine maintenance for the facility.

k. Develop a formal operations manual for use at the facility.

GAI Consultants, Inc.

Bernard M. Mihalcin

Bernard M. Mihalcin, P.E.

Approved by:

G. K. Withers

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
BERNARD M. MIHALCIN
ENGINEER
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Date 14 May 79

Date 8 Jun 79

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OVERVIEW PHOTOGRAPH
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PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
JEANNETTE DAM
NDI# PA-486, PENNDER# 65-9

SECTION 1
GENERAL INFORMATION

1.0 Authority.

The Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of inspection of dams throughout the United States.

1.1 Purpose.

The purpose is to determine if the dam constitutes a hazard to human life or property.

1.2 Description of Project.

a. Dam and Appurtenances. Jeannette Dam is a 36-foot high earth dam approximately 480 feet in length. The dam impounds a small 10-acre reservoir locally known as Mountain Valley Lake. The facility is equipped with a small concrete and masonry spillway located approximately 35 feet upstream of the embankment along the western shore of the lake (see Figure 1 and Photograph 4). The spillway discharges into a trapezoidal-shaped diversion channel which parallels the western shore. A historical report indicates that the diversion channel, approximately 1500 feet in length, was designed to divert all stream inflow completely around the reservoir and that water was piped to the reservoir from other impoundments. According to data contained in PennDER files, the outlet works consists of a 16-inch diameter cast iron pipe (C.I.P.) outlet and a 20-inch diameter C.I.P. blowoff which reportedly extend through the embankment and are valved at the gate house downstream.

b. Location. Jeannette Dam is located across a small branch of Brush Creek approximately 2.5 miles west of Greensburg, in Hempfield Township, Westmoreland County, Pennsylvania. U. S. Route 30 passes within 50 feet of the southern shore of the lake. The dam, reservoir, and watershed are located on the Greensburg, Pennsylvania, U.S.G.S. 7.5 minute series topographic quadrangle (see Regional Vicinity Map, Appendix G). The coordinates of the dam are N40° 18.5', W79° 35.3'.

c. Size Classification. Small (36 feet measured height and approximately 300 acre-feet storage at top of dam).

d. Hazard Classification. High (see Section 3.1.e).

e. Ownership. Mrs. Helen Indyk
1015 Vermont Street
McKeesport, Pennsylvania 15131

f. Purpose of Dam. Recreation.

g. Historical Data. According to information contained in PennDER files, Jeannette Dam was constructed in 1888 or 1889. The facility was engineered by C. W. Knight of Rome, New York. The original owner and purpose of the facility is not known; however, as of 1915, the facility served as an integral part of the water supply system owned and operated by the Westmoreland Water Company. The facility was acquired by the Soffer Realty Company of McKeesport, Pennsylvania, in 1953, and subsequently transferred to the present owner (Helen Indyk).

The embankment was reportedly constructed of rolled earth with a puddle cutoff wall. The original drawings, which are referenced in a historical report dated 1915, are apparently no longer available. A comparison of the dimensions of the original facility (as recorded in PennDER files) with those obtained by the inspection team through field measurements indicates the embankment has remained virtually unchanged. One exception is the small concrete spillway structure between the lake and adjacent diversion channel that was added in 1955.

As of 1953, the facility has been operated as a recreational pay-to-fish lake.

1.3 Pertinent Data.

a. Drainage Area (square miles). 0.34

b. Discharge at Dam Site.

Discharge Capacity of the Outlet Conduits - Discharge curves are not available. The visual inspection revealed the outlet conduits to be currently non-operational.

Combined Discharge Capacity of the Emergency Spillway and Diversion Channel at Top of Dam Pool ≃ 390 cfs.

c. Elevation (feet above mean sea level). The following elevations were obtained through field measurements that were based on the elevation of the water surface at normal pool (el. 1168.0) as defined on U.S.G.S. 7.5 minute series topographic quadrangle Greensburg, Pennsylvania (see Note 3, Sheet 2, Appendix C).

Top of Dam	1171
Maximum Design Pool	Not known
Maximum Pool of Record	Not known
Spillway Crest	1168
Outlet Upstream Invert	Not known
Outlet Downstream Invert	Not known
Streambed at Dam Centerline	Not known
Maximum Tailwater	Not known

d. Reservoir Length (miles).

Top of Dam	0.2
Normal Pool	0.2

e. Storage (acre-feet).

Top of Dam	300
Normal Pool	230

f. Reservoir Surface (acres).

Top of Dam	11
Normal Pool	9

g. Dam.

Type	Earth
Length	480 feet (field measured)
Height	36 feet (field measured)
Top Width	18 feet (field measured)
Downstream Slope	2H:1V (field measured)
Upstream Slope	2H:1V (as per PennDER files)
Zoning	None indicated

	Impervious Core	PennDER files indicate the embankment was constructed with a puddle cutoff the location and dimensions of which could not be ascertained.
	Grout Curtain	None indicated
h.	<u>Diversion Channel</u>.	Trapezodial-shaped channel constructed parallel to the western shore of the lake extending upstream from the embankment to the culvert passing beneath U. S. Route 30 (total length ≈ 1,500 feet; see Figure 1).
i.	<u>Spillway</u>	
	Type	Uncontrolled concrete channel with masonry wingwalls.
	Channel Width	5 feet
	Channel Length	15 feet
	Crest Elevation	1168
	Upstream Channel	Not applicable
	Downstream Channel	The spillway discharges directly into the trapezoidal-shaped diversion channel at a point approximately 35 feet upstream of the embankment.
j.	<u>Outlet Conduits</u>.	The outlet works reportedly consist of a 16-inch diameter C.I.P. outlet and a 20-inch diameter C.I.P. blowoff which extend through the embankment and are valved within the downstream gate house.

SECTION 2
ENGINEERING DATA

2.1 Design.

a. Design Data Availability and Sources.

1. Hydrology and Hydraulics. No design data, calculations, or reports are available.

2. Embankment. No design data, calculations, or reports are available. Limited data pertaining to the design features of Jeannette Dam are contained within PennDER files in the form of inspection reports, dated photographs, and miscellaneous correspondence. No design or construction drawings are available.

3. Appurtenant Structures. See 2 above.

b. Design Features.

1. Embankment. Based on the information contained in PennDER files, general statements can be made regarding the embankment design. The embankment was constructed in 1888 or 1889, and aside from minor crest regrading, has apparently not undergone any major modifications. The embankment measures 36 feet high and approximately 480 feet in length along its centerline. The downstream slope is 2H:1V and the crest is 18 feet wide. According to the information available, the upstream slope is also 2H:1V and the embankment is 159 feet wide at the base. An inspection report dated 1915 indicates that according to original plans, the embankment was constructed of rolled earth with a puddle cutoff wall.

2. Appurtenant Structures.

a) Diversion Channel. The diversion channel is an unlined, trapezoidal-shaped channel located parallel to the western shore of the lake. The channel is approximately 1,500 feet long as measured from the centerline of embankment at the left abutment to the downstream end of the culvert that passes beneath U. S. Route 30. The dimensions of the cross-sections vary, with the channel being somewhat wider and more nearly rectangular along its upper reaches (see Sheet 5, Appendix C).

b) Spillway. Two spillway structures are presently associated with the Jeannette Dam. The spillway, constructed as part of the original facility, is a cut stone structure located along the embankment centerline at the

left abutment. It consists of a combination drop-inlet and overflow structure designed to accept flow from the diversion channel and discharge it into the natural stream below the embankment. Flow from the reservoir may have exited via the plugged overflow conduit adjacent to the concrete spillway (see Figure 2), into the diversion channel and the drop inlet. The second spillway structure associated with the facility was added in 1955 and is located approximately 35 feet upstream of the embankment. The structure is a small, concrete channel with masonry wingwalls and connects the lake with the adjacent diversion channel. The spillway channel is 15 feet long and 5 feet wide with wingwalls measuring slightly over 2 feet high (see Photograph 4).

c) Outlet Works. Little information is available regarding the outlet works at Jeannette Dam. Historical reports indicate that a 16-inch diameter C.I.P. supply line and a 20-inch diameter C.I.P. blowoff line extend through the embankment and are valved at the gate house located at the downstream toe. The 16-inch diameter outlet conduit is reportedly laid at or above natural ground. In contrast, the 20-inch diameter blowoff was reportedly laid in a trench several feet below the ground surface. The exact locations of the conduits through the embankment are not known.

c. Design Data and Procedures.

1. Hydrology and Hydraulics. No design data or information relative to design procedures are available.

2. Embankment. None available.

3. Appurtenant Structures. None available.

2.2 Construction Records.

No construction records are available for the facility.

2.3 Operating Procedures.

There are no formal operating procedures adhered to by the present owner and the facility is essentially self-regulating.

2.4 Other Investigations.

There are no available records concerning formal studies or investigations of Jeannette Dam other than inspection reports from PennDER files dating to 1915.

2.5 Evaluation.

Information contained in PennDER files indicates the Jeannette Dam was constructed in 1888 or 1889. The earliest available records are dated 1915 or approximately 25 years after construction. Little engineering data and no drawings are available relative to the design and construction of the facility; however, sufficient information is available to make a reasonable Phase I evaluation of the dam and its appurtenances.

SECTION 3
VISUAL INSPECTION

3.1 Observations.

a. General. The general appearance of the facility suggests that it is in poor condition.

b. Embankment. The embankment was found to be in poor condition. Major deficiencies included a large hole in the downstream slope and a deep erosion ditch along the entire left abutment-embankment contact. The hole, located about 150 feet from the left abutment, is about 15 feet in diameter and 4 to 5 feet deep (see Figure 1 and Photograph 12). Discussions with a representative of the owner indicated that the hole resulted from a break in the terra-cotta conduit which once carried flow from the drop inlet. Probing through the debris within the depression verified that the conduit was in fact broken at this location and has not been repaired. The owner's representative indicated that the conduit is clogged and non-functional.

The erosion gulley along the left abutment-embankment contact has resulted from the apparent clogging and malfunctioning of the drop-inlet spillway system (see Figure 2 and Photographs 5 through 8). This deficiency is most serious and actually threatens the stability of the entire embankment. Minor deficiencies include a general neglect of embankment maintenance and a small seep along the right abutment. The downstream slope was strewn with litter and overgrown with bushes and small trees. The seep at the right abutment emanates from about mid-height of the embankment and has been noted in previous inspection reports as early as 1915.

c. Appurtentant Structures.

1. Diversion Channel. The diversion channel, in general, was observed to be in good condition although in need of maintenance (see Photographs 9, 10, 11). Specific items of concern are the silted condition of the outlet end of the highway culvert passing under U. S. Route 30 (Photograph 11), the apparent breach of the separating dike and obstructions in the channel as it passes under a concession stand shown in Photograph 10, and the obstruction from fallen trees shown in Photograph 9. These deficiencies in the channel system, although impairing the designed function of the channel, have little detrimental effect on the performance of the overall facility during a major flood.

2. Spillway Structures. There are two spillway structures associated with this facility, both of which were found to be in poor condition.

The small channel spillway located between the reservoir and diversion channel is shown in Photograph 4. As indicated, the end of the spillway adjacent to the diversion channel has settled and cracked apparently as a result of undercutting. Under low flow conditions, discharge actually passes under the structure and into the diversion channel, further undercutting the slab. The downstream masonry wall has cracked beneath the wood plank walkway and has also rotated several inches.

The condition of the original drop-inlet structure is shown in Photographs 7 and 8. The extent of erosion and deterioration is readily discernible when compared with Photograph 6 taken in 1915. Approximately 16 feet of soil has been eroded from all sides of the structure to the extent that the foundation is being undercut along its left corner, seriously endangering its stability. The erosion also threatens the stability of the embankment and its natural soil foundation in the area of the inlet structure and along the left abutment-embankment contact.

The outlet pipe has remained intact at the spillway structure; however, as previously noted the pipe is reportedly clogged and is broken within the downstream slope. Furthermore, the location of the outlet end is unknown and is presumably buried by sediment near the toe of the dam.

3. Outlet Works. Based on interviews and observations made during the inspection, the outlet works at Jeannette Dam appear to be inoperable. The present owner knows little, if anything, about the system and has never maintained it. The gate house structure (see Photograph 13) is dilapidated. Valves, where visible, are heavily corroded, and the valve pit is flooded presumably by a continual flow emanating from a 3/4-inch broken pipe of unknown origin within the valve chamber. In addition, there is an apparent vault or valve pit located just downstream of the gate house, also flooded, of which no records are available. The outlet end of the blowoff line could not be located and is presumably also buried by sediment. The owner's representative indicated that the supply line had been disconnected and capped by the previous owner at the time of transfer.

d. Reservoir. Mountain Valley Lake is a small reservoir with a surface area of approximately 10 acres. The reservoir is flanked by steep wooded slopes to the east and west (see Photograph 2). U. S. Route 30 bisects the

watershed along the southern edge of the reservoir and consequently, the complexion of the watershed is becoming increasingly urban (see Regional Vicinity Map, Appendix G).

e. Downstream Channel. The stream immediately below Jeannette Dam flows in a northerly direction through a broad wooded valley. At a point approximately 1,300 feet downstream, the channel turns at approximately 90 degrees and follows a westerly route that parallels the Penn Central Railroad tracks into the City of Jeannette. A building owned by the railroad and manned 24 hours per day is located between the tracks and the stream approximately one mile from the embankment (see Photograph 15) and is the first structure that would possibly be affected by flooding conditions as a result of an embankment breach. At least three to four homes (see Photograph 16) and industry are also located along the stream as it approaches Jeannette (see Regional Vicinity Map, Appendix G). Consequently, the hazard classification for the facility is considered to be high.

3.2 Evaluation.

Based on field observations, the condition of the facility, at the time of inspection, was considered unsafe and in need of emergency remedial action. A meeting attended by representatives of the owner, PennDER, Corps of Engineers (Pittsburgh District), and the inspection team was held, following the inspection, in which emergency action to temporarily prevent further erosion of the spillway channel was discussed. PennDER subsequently issued a formal letter notifying the owner of the unsafe conditions and required remedial action.

It is emphasized that the above action was considered as a temporary measure. An in-depth, detailed evaluation of the spillway system and outlet works is necessary with subsequent remedial measures as required.

SECTION 4
OPERATIONAL PROCEDURES

4.1 Normal Operating Procedure.

There are no formal operating procedures associated with Jeannette Dam and the facility is essentially self-regulating. Typically, low inflow is diverted around the reservoir via the diversion channel. Excess inflows into the reservoir are discharged through the small concrete channel spillway (see Photograph 4) into the diversion channel. The outlet conduits are apparently never operated and appear to be inoperable.

4.2 Maintenance of Dam.

Aside from clearing the embankment every several years, no regular maintenance is performed at the facility and no formal maintenance manual is available.

4.3 Maintenance of Operating Facilities.

Based on observations made during the visual inspection, no routine maintenance is performed on the operating facilities.

4.4 Warning Systems.

There are no formal warning systems associated with this facility.

4.5 Evaluation.

There are no formal manuals or procedures for maintaining Jeannette Dam or its operating facilities. Consequently, serious maintenance related deficiencies have developed. In addition, there is no formal warning system in effect at this site.

SECTION 5
HYDROLOGIC/HYDRAULIC EVALUATION

5.1 Design Data.

No design data, calculations, or reports are available.

5.2 Experience Data.

No records of spillway, diversion channel, and/or outlet conduit discharges are available.

5.3 Visual Observations.

Based on visual observations, both spillway structures, outlet conduits, and the discharge channel are in poor condition. The deficiencies are of such extent that the facility is considered unsafe in its present condition.

5.4 Method of Analysis.

The facility has been analyzed in accordance with the procedures and guidelines established by the U. S. Army Corps of Engineers, Baltimore District, for Phase I hydrologic and hydraulic evaluations. The analysis has been performed utilizing a modified version of the HEC-1 program developed by the U. S. Army Corps of Engineers, Hydrologic Engineering Center, Davis, California. Analytical capabilities of the program are briefly outlined in the preface contained in Appendix C.

5.5 Summary of Analysis

a. Spillway Design Flood (SDF). In accordance with procedures and guidelines contained in the National Guidelines for Safety Inspection of Dams for Phase I Investigations, the Spillway Design Flood (SDF) for Jeannette Dam ranges between the 1/2 PMF (Probable Maximum Flood) and the PMF. This classification is based on the relative size of the dam (small), and the potential hazard of dam failure to downstream developments (high). Due to the high damage potential, the structural condition of the spillway and dam, and the question of the exact source of the reservoir water, the SDF for this facility is considered to be the PMF.

b. Results of Analysis. Jeannette Dam was analyzed under present normal operating conditions. That is, the reservoir was initially at its assumed normal pool elevation of 1168.0 feet and discharging into the diversion channel which parallels the reservoir. The low level outlet works of the dam were found to be inoperable during field inspection and were disregarded in this analysis.

Two major assumptions were made in order to perform this evaluation. The first assumption dealt with the reservoir discharge control. As explained in Section 3, the original drop-inlet spillway structure was and is nonfunctional, which has caused the diversion channel discharges to flow around the spillway. The channel discharges have eroded away the earth which once surrounded the structure, with the erosion propagating upstream along the channel. Presently, a free overfall section of the diversion channel controls the facility discharges (see Appendix D, Photographs 4 and 5, and Appendix C, Sheets 7 and 8). Since the channel is unlined earth, there is no reason to believe that progressive upstream erosion will not continue under high flows. However, it was assumed that the present free overfall control was stable enough so that some elevation discharge relationship could be computed for the dam.

The second major assumption dealt with reservoir inflows. About 1/2 of the potential reservoir inflow is somewhat controlled by a 2-1/2- by 4-foot concrete box culvert, which passes beneath U. S. Route 30, prior to discharging into the reservoir diversion channel. Although the peak inflow into the reservoir area could possibly be attenuated, to some extent, by the highway embankment (depending on the discharge-storage relationship of the culvert), possible beneficial effects were ignored in this Phase I study.

The diversion channel directly drains about 80 percent of the basin area and originally had no direct connection to the reservoir. However, in 1955, a small concrete spillway was constructed through the dike which separates the reservoir from the diversion channel (see Photograph 4). Even more recently, the dike was breached (due to overtopping) near the upstream end of the reservoir such that any flows above normal will, at least partially, enter the reservoir (see Photograph 10). Therefore, it was also assumed that all inflows passed directly into the reservoir, with reservoir outflows controlled by the diversion channel.

In addition to the above assumptions, it was assumed that the stream channel downstream from the dam was dry prior to the routing of the dam outflows. All pertinent engineering calculations relative to the evaluation of Jeannette Dam are provided in Appendix C.

Overtopping analysis (using the Modified HEC-1 Computer Program) indicated that the discharge/storage capacity of Jeannette Dam could accommodate about 60 percent of the PMF prior to overtopping of the embankment (Appendix C, Summary Input/Outout Sheets, Sheet L). However, as stated previously, the elevation-discharge relationship of this facility was based on an erodible control section, and thus, the computed relationship may not be representative of actual conditions. The capacity of the old spillway structure was reported to be about 200 cfs (see Appendix C, Sheet 1, Note 1 for Reference), so that if the old structure was fully functional, the discharge/storage capacity of the dam would only be about 32 percent of the PMF (Summary Input/Output Sheets, Sheet L). In any event, since the SDF for this facility is the PMF, Jeannette Dam will be overtopped and could possibly fail under moderate to low frequency floods of less than SDF magnitude. However, in its present condition, the dam could possibly fail prior to overtopping due to the poor structural condition of the spillway area (see Section 6 for explanation).

5.6 Spillway Adequacy.

Since the adequacy of a spillway is based on the probability of embankment overtopping under 1/2 PMF to PMF conditions, and under existing conditions, Jeannette Dam can possibly pass a flood of 0.6 PMF magnitude, the spillway system is considered inadequate, but not seriously inadequate.

This condition exists by virtue of the erosion and downcutting of the discharge channel around the old spillway structure and left abutment, thereby increasing the hydraulic capacity of the channel, if it can be assumed to be stable. This action has, however, created a condition of potential embankment instability from loss of toe support. Thus, although not seriously inadequate, the spillway system is considered structurally unsafe.

The above spillway adequacy classification is applicable for the condition observed at the time of inspection. However, if the original spillway structure were restored, as designed, its classification would be seriously inadequate, since the embankment would be overtopped and probably breached by floods of less than 1/2 PMF magnitude and breaching would probably lead to serious downstream consequences (see Section 6.1).

SECTION 6
EVALUATION OF STRUCTURAL INTEGRITY

6.1 Visual Observations.

a. Embankment. The conditions observed during the field inspection suggest the embankment is in poor condition. The general appearance of the facility suggests a lack of maintenance and care. This is considered serious in the light of the age of the facility and its hazard classification.

The condition of the discharge channel just beyond the embankment toe and at the left abutment is considered critical. Extensive erosion observed within this area is affecting the stability of the embankment, as lateral support is removed from the toe. Although the overtopping analysis of Jeannette Dam (Section 5.5) indicated that the dam facility could accommodate a flood of about 60 percent PMF magnitude, it is felt that the dam could fail prior to overtopping due to the existing poor structural condition of the spillway. Failure would likely be by sudden embankment slumping and ensuing downcutting following erosion of the toe of the dam by the reservoir outflow. (All reservoir outflow is presently channeled along the embankment left abutment-natural earth contact and then along the toe via a large eroded ditch.) Several feasible alternatives were analyzed since it is difficult, if not impossible, to determine exactly how or if a specific dam will fail. It is assumed, though, that failure will be sudden.

The Modified HEC-1 Program was used to conduct the breaching analysis, assuming that a quick continuous downcutting type of breach could approximately model the above described actual type of failure expected. The 1/2 PMF was chosen as the failure flood with breaching initiated by the 1/2 PMF peak discharge. (That is, breaching began when the reservoir level rose to the elevation corresponding to the 1/2 PMF peak discharge.) The major concern of the breaching evaluations is the impact of the various breach discharges on increasing downstream water surface elevations.

Two sets of breach geometry were evaluated under a representative failure time (total time for each section to reach its final dimensions) of 30 minutes (Appendix C, Sheets 19 and 20). The two sets of geometry were considered to be the minimum and maximum probable failure sections. In addition, an average or more probable breach section (intermediate to the minimum and maximum sections) was analyzed

under both the 30-minute failure time and a longer failure time (one hour), so that the effect of failure time on breach outflows might be examined.

The maximum breach section provided the largest breach peak outflow of about 12560 cfs, with the minimum section providing a breach peak outflow of about 5350 cfs (Summary Input/Output Sheets, Sheets O and N). The average or more probable breach section outflows were about 11680 cfs for the 30-minute failure time, and about 6390 cfs for the one hour failure time (Summary Input/Output Sheets, Sheets P and R). The water surface elevations corresponding to the more probable breach peak discharges at a section located approximately 5000 feet downstream from the dam (the railroad building section, see Photograph 15) were, respectively, about 1096.7 feet and 1095.0 feet; and those at a section located approximately 6600 feet downstream from the dam (the bridge embankment section, see Photograph 16) were, respectively, about 1085.3 feet and 1084.0 feet. (Summary Input/Output Sheets, Sheet T). The base condition (1/2 PMF peak flow without dam breaching) elevations at these two sections were, respectively, about 1087.3 feet and 1069.1 feet. (Summary Input/Output Sheets, Sheet L). Therefore, the increases in the downstream water surfaces above the base condition caused by the failure of the present Jeannette Dam are on the order of 8 to 9 feet at the railroad building section (with the first floor elevation of the building approximately at 1093.0 feet), and on the order of about 15 to 16 feet at the bridge embankment section (with the first floor elevation of the house located at this section approximately at 1080 feet). Thus a failure of Jeannette Dam could lead to increased loss of life and property damage in the downstream community. As it appeared possible that continued erosion could result in failure of the downstream embankment slope, an emergency meeting was called at the facility to establish a plan of temporary remedial action to alleviate the condition until a detailed evaluation and design could be performed.

A large hole, possibly excavated to expose a broken pipe, was observed at the downstream toe about 150 feet from the left abutment. This is considered a significant deficiency as it presents a local weak area within the embankment where further problems are likely to occur. Since no evidence of seepage, piping, or slope failure were observed in this area during the inspection, it is not considered an immediate threat to embankment stability. Nevertheless, the condition is undesirable.

b. Appurtenant Structures.

1. Diversion Channel. Aside from the breached dike shown in Photograph 10, the diversion channel upstream of the spillway structures is in good condition. It is, however, in need of general maintenance to clear channel obstructions and partially plugged culverts.

2. Spillway. Both spillway structures are in poor structural condition. Discharge is currently undercutting and eroding the foundations of both stuctures. The effect of a total collapse of the drop-inlet structure is uncertain; however, its immediate removal was recommended in the previously mentioned emergency meeting.

3. Outlet Conduits. The outlet works are currently inoperable. The gate house is dilapidated and flooded. The valves are severely corroded. The outlet end of the blowoff pipe is not visible and there are no upstream controls on the pipe inlets.

6.2 Design and Construction Techniques.

No information is available that details the methods of design and/or construction.

6.3 Past Performance.

Correspondence contained in PennDER files indicates that the facility was constructed in 1888 or 1889. Available data also indicates that as early as 1915, and throughout the life of the facility, there has been much doubt raised as to the hydraulic adequacy of the spillway system. The new spillway structure was possibly added in an attempt to increase the spillway capacity. No records of major floods are available.

6.4 Seismic Stability.

The dam is located in Seismic Zone No. 1 and is thus subject to minor earthquake induced dynamic forces. As the overall stability of the embankment (due to erosion along the toe) is questionable, it is possible that even minor earthquake induced dynamic forces could be significant at high pool levels. However, no calculations, investigations, etc., were performed to confirm this opinion.

SECTION 7
ASSESSMENT AND RECOMMENDATIONS FOR REMEDIAL MEASURES

7.1 Dam Assessment.

a. Safety. Visual inspection indicates that the structure is in poor condition and immediate remedial repairs are required. Hydrologic/hydraulic analyses indicates that the spillway facility, in its present eroded configuration can accommodate a storm of about 60 percent PMF magnitude and is, therefore, deemed inadequate but not seriously inadequate. Structural deficiencies associated with the facility, however, are of such a nature that, if left uncorrected, could result in the failure of the dam, prior to being overtopped, with subsequent loss of life and substantial property damage. Thus, the facility, as observed at the time of inspection, is considered unsafe and in an emergency condition. A meeting was subsequently held at the facility among representatives of the PennDER, Corps of Engineers (Pittsburgh District), inspection team, and owner during which a course of temporary remedial action was discussed.

b. Adequacy of Information. The available data was considered sufficient to make a general assessment of the facility.

c. Urgency. It is suggested that the recommendations listed below be implemented immediately.

d. Necessity for Additional Investigations. Additional investigations to more accurately ascertain the stability and hydrologic/hydraulic adequacy of the facility are considered necessary.

7.2 Recommendations/Remedial Measures.

To alleviate the unsafe emergency condition of the facility, it is recommended that the owner immediately:

a. Draw down the reservoir until permanent remedial repairs have been completed.

b. Immediately develop an emergency warning system for the protection of downstream residents should the need arise. Included in the system should be provisions for around-the-clock surveillance during unusually heavy precipitation.

c. Remove entirely the old masonry drop-inlet structure located at the left abutment. The drop-inlet conduit should be disconnected prior to removal of the spillway and sealed at all exposed ends (including those observed in the hole at the downstream toe).

d. Temporarily backfill (with adequately sized, well-graded rock) the present discharge channel to restore lateral support to the area just below the downstream toe and preclude further erosion.

e. Retain a registered professional engineer experienced in the design and construction of earth dams to perform a detailed study of the facility and more accurately assess the capacity of the spillway system. The owner should then make required modifications, in addition to those listed below, to ensure the structural integrity of the embankment and the hydrologic/hydraulic adequacy of the spillway system.

Items to be considered in the engineering assessment and subsequent remedial work should include.

f. Restoration of the outlet works. Included should be provisions for valving the outlet conduits at both the upstream and downstream ends and for renovating and repairing the present gate house.

g. Filling the large hole at the downstream embankment toe near the left abutment and restoring the area to grade.

h. Removal of all materials and debris currently obstructing the diversion channel. Included should be provisions for clearing the culvert beneath the concessions stand and restoring the breached section of the dike.

i. Clearing all brush, debris, and litter from the embankment slopes and immediate downstream area to arrest root growth and enhance future inspection.

In order to subsequently maintain a safe operating status at the facility at all times, it is recommended that the owner:

j. Develop a manual outlining a program of regular routine maintenance for the facility.

k. Develop a formal operations manual for use at the facility.

APPENDIX A

CHECK LIST - ENGINEERING DATA

CHECK LIST
ENGINEERING DATA
PHASE I

NAME OF DAM: Jeannette Dam

NDI#: PA-486 PENNDER#: 65-9

ITEM	REMARKS NDI# PA - 486
PERSONS INTERVIEWED AND TITLE	1. Mrs. Helen Indyk (Owner) 2. Joe Gracan (Friend of Owner) 3. Adolph Heide (Employee)
REGIONAL VICINITY MAP	U.S.G.S. 7.5 minute series topographic quadrangle Greensburg, Pennsylvania (see Regional Vicinity Map, Appendix G).
CONSTRUCTION HISTORY	Jeannette Dam was constructed in 1888 or 1889. However, the earliest available correspondence is dated 1915.
AVAILABLE DRAWINGS	No design drawings are available. (see Field Sketches, Figures 1 and 2, Appendix F).
TYPICAL DAM SECTIONS	No design drawings are available.
OUTLETS: PLAN DETAILS DISCHARGE RATINGS	No design drawings are available. Discharge rating curves are not available.

ITEM	REMARKS NDI# PA - 486
SPILLWAY: PLAN SECTION DETAILS	No design drawings are available. (see Field Sketches, Figures 1 and 2, Appendix F)
OPERATING EQUIPMENT PLANS AND DETAILS	No design drawings are available.
DESIGN REPORTS	None available.
GEOLOGY REPORTS	None available.
DESIGN COMPUTATIONS: HYDROLOGY AND HYDRAULICS STABILITY ANALYSES SEEPAGE ANALYSES	No design data, calculations, or reports are available.
MATERIAL INVESTIGATIONS: BORING RECORDS LABORATORY TESTING FIELD TESTING	None available.

ITEM	REMARKS NDI# PA - 486
BORROW SOURCES	Not known.
POST CONSTRUCTION DAM SURVEYS	Boundary survey performed in December, 1977 (includes aerial photos).
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None.
HIGH POOL RECORDS	Not known.
MONITORING SYSTEMS	None.
MODIFICATIONS	Concrete channel spillway between the reservoir and diversion channel was constructed in 1955 according to the owner.

ENGINEERING DATA (CONTINUED)

NDI# PA-486

ITEM	REMARKS
PRIOR ACCIDENTS OR FAILURES	None recorded.
MAINTENANCE: RECORDS MANUAL	Downstream slope last cleared in 1976 by a private contractor. According to the owner this operation is performed every several years.
OPERATION: RECORDS MANUAL	None.
OPERATIONAL PROCEDURES	None.
WARNING SYSTEM AND/OR COMMUNICATION FACILITIES	None.
MISCELLANEOUS	None.

CHECK LIST
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

NDI ID # PA-486

PENN DER ID # 65-9

SIZE OF DRAINAGE AREA: 0.34 square miles

ELEVATION TOP NORMAL POOL: 1168 STORAGE CAPACITY: 230 acre-feet

ELEVATION TOP FLOOD CONTROL POOL: - STORAGE CAPACITY: -

ELEVATION MAXIMUM DESIGN POOL: - STORAGE CAPACITY: -

ELEVATION TOP DAM: 1171 STORAGE CAPACITY: 300 acre-feet

SPILLWAY DATA

CREST ELEVATION: 1168 (spillway located between reservoir and diversion channel)

TYPE: Concrete channel with masonry wingwalls

WIDTH: 5 feet

LENGTH: 15 feet

SPILLOVER LOCATION: Approximately 35 feet upstream of embankment

NUMBER AND TYPE OF GATES: None

OUTLET WORKS

TYPE: 16-inch diameter C.I.P. outlet and 20-inch diameter C.I.P. blowoff

LOCATION: valved at the gate house

ENTRANCE INVERTS: Not known

EXIT INVERTS: Not known

EMERGENCY DRAWDOWN FACILITIES: 20-inch diameter C.I.P. blowoff valved at gate house (appears to be inoperable

HYDROMETEOROLOGICAL GAGES

TYPE: None

LOCATION: -

RECORDS: -

MAXIMUM NON-DAMAGING DISCHARGE: Not known

Other
a) Unlined trapezoidal-shaped diversion channel by-passes the reservoir.
b) Original drop-inlet spillway structure inoperable.

APPENDIX B

CHECK LIST - VISUAL INSPECTION

CHECK LIST
VISUAL INSPECTION
PHASE 1

NAME OF DAM Jeannette Dam STATE PA COUNTY Westmoreland

NDI# PA - 486 PENNDER# 65-9

TYPE OF DAM Earth SIZE Small HAZARD CATAGORY High

DATE(S) INSPECTION 9 March 1979 WEATHER Clear & Sunny TEMPERATURE 55° @ 11:00

POOL ELEVATION AT TIME OF INSPECTION 1168 M.S.L.

TAILWATER AT TIME OF INSPECTION N/A M.S.L.

INSPECTION PERSONNEL	OWNER REPRESENTATIVES	OTHERS
B. M. Mihalcin	Helen Indyk (owner)	
S. R. Michalski	Joe Gracan (friend of owner)	
D. L. Bonk	Adolph Heide (employee)	
W. J. Veon		

RECORDED BY B. M. Mihalcin

EMBANKMENT

ITEM	OBSERVATIONS AND/OR REMARKS NDI# PA - 486
SURFACE CRACKS	None observed.
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	Large hole approximately 15 feet in diameter and 4 to 5 feet deep is located 100 to 150 feet from the old spillway at the left abutment. The discharge conduit from the original drop-inlet spillway apparently clogged and burst at this location and was never repaired.
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Severe erosion occurring around the old spillway at the left abutment and along the discharge channel just below the toe along the left side of the embankment. Side walls are 1H:1V to near vertical. Depths of erosion varies from approximately 16 feet at old spillway to a few feet along the discharge channel. Erosion appears to be 1 or 2 feet into decomposed rock.
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	Horizontal alignment is good. Vertical alignment also looks good. Crest is sloped toward the reservoir possibly from recreational use and/or erosion above the riprap line.
RIPRAP FAILURES	Durable sandstone riprap covers the upstream embankment slope to about 6 inches above normal pool.
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Seepage issuing from the right abutment at the junction with embankment. Otherwise the area is in good condition. Left abutment is experiencing serious erosion. Slope failure is in evidence particularly around the old spillway.

EMBANKMENT

ITEM	OBSERVATIONS AND/OR REMARKS NDI# PA - 486
DAMP AREAS IRREGULAR VEGETATION (LUSH OR DEAD PLANTS)	Swampy conditions around gate house.
ANY NOTICEABLE SEEPAGE	Seepage issuing from right abutment (2-3 gpm) has created a slightly swampy condition at the toe. Seepage rate was difficult to estimate due to debris littering the site. A small pool of water exists adjacent the gate house and is likely emanating from the gate house where a partially buried small diameter pipe of unknown origin and purpose was observed to be flowing.
STAFF GAGE AND RECORDER	None.
DRAINS	Remnants of drain pipes were observed at the toe near the gate house. Sources or locations of drains could not be determined.
	Downstream slope is covered with briars, stumps, small trees, and litter.

OUTLET WORKS

ITEM	OBSERVATIONS AND/OR REMARKS NDI# PA - 486
INTAKE STRUCTURE	Submerged and not observed.
OUTLET CONDUIT (CRACKING AND SPALLING OF CONCRETE SURFACES)	End of blowoff pipe could not be located. Possibly covered with sediment.
OUTLET STRUCTURE	Masonry gate house is located at the base of the dam near the center of the embankment. Presently the structure is in a condition of disrepair. A large hole in the roof has exposed the interior causing substantial deterioration.
OUTLET CHANNEL	Natural stream immediately below the dam is heavily sedimented (probably from erosion along left abutment) and swampy.
GATE(S) AND OPERATIONAL EQUIPMENT	Four valves are contained in the gate house. There are possibly more in the pit adjacent the gate house. All valves within the gate house are partially inundated. Valve stems appear to be severely rusted and corroded. It is doubtful that any of the valves are operable. An uncontrolled discharge was observed from a small diameter conduit within the gate house.

EMERGENCY SPILLWAY

ITEM	OBSERVATIONS AND/OR REMARKS NDI# PA - 486
TYPE AND CONDITION	Large cutstone drop-inlet structure located at the left abutment. Due to the serious erosion around the structure, it has become totally non-functional.
APPROACH CHANNEL	Extensively eroded to the base of the drop-inlet structure. See "Diversion Channel" sheet 6 of 8.
SPILLWAY CHANNEL AND SIDEWALLS	Not applicable.
STILLING BASIN PLUNGE POOL	None.
DISCHARGE CHANNEL	See "Discharge Channel" sheet 6 of 8.
BRIDGE AND PIERS	None.
EMERGENCY GATES	None.

SERVICE SPILLWAY

ITEM	OBSERVATIONS AND/OR REMARKS NDI# PA - 486
TYPE AND CONDITION	Small concrete channel 5 feet wide and 15 feet long with masonry wingwalls about 2 feet high located approximately 35 feet upstream of embankment crest. Structure is presently in poor condition. Floor slab has been undercut by diversion channel flows and rotated downward resulting in a large crack across the base slab.
APPROACH CHANNEL	The spillway is located through the earth dike between the reservoir and diversion channel. It serves to discharge excess inflows from the reservoir directly into the diversion channel. There is no approach channel.
OUTLET STRUCTURE	Not applicable.
DISCHARGE CHANNEL	Flows from the spillway are discharged into the diversion channel. Approximately 10 feet downstream, flow is directed into the eroded discharge channel which follows a path around the old masonry spillway and then parallels the left side of the embankment.
DIVERSION CHANNEL	Trapezoidal-shaped channel of varying cross-section located parallel to the western shore of the lake. The channel is approximately 1500 feet in length and extends from the embankment to the culvert beneath U.S. Route 30 at the southern edge of the lake. The channel is partially obstructed at several locations.

INSTRUMENTATION

ITEM	OBSERVATIONS AND/OR REMARKS NDI# PA - 486
MONUMENTATION SURVEYS	None.
OBSERVATION WELLS	None.
WEIRS	None.
PIEZOMETERS	None.
OTHERS	Aerial survey markings were observed along the embankment crest. Standard survey stakes were also observed along the left side of the reservoir.

RESERVOIR AREA AND DOWNSTREAM CHANNEL

NDI# PA - 486

ITEM	OBSERVATIONS AND/OR REMARKS
SLOPES: RESERVOIR	Moderate to steep slopes - heavily wooded. No slope distress noted.
SEDIMENTATION	None observed.
DOWNSTREAM CHANNEL (OBSTRUCTIONS, DEBRIS, ETC.)	200- to 300- foot wide valley covered with trees and brush. The stream flows in a northerly direction for approximately 1,300 feet before turning at approximately 90 degrees and following a westerly route that parallels the Penn Central Railroad tracks into the City of Jeannette.
SLOPES: CHANNEL VALLEY	Steep and heavily wooded.
APPROXIMATE NUMBER OF HOMES AND POPULATION	A building owned by the railroad and manned 24 hours per day is located between the tracks and channel approximately 1-mile from the embankment. This structure as well as several homes along the channel just downstream could possibly be affected by a sudden failure of the dam (estimated population 16-20). Many more homes and industries are located along the channel banks as the stream approaches Jeannette.

APPENDIX C

HYDRAULICS/HYDROLOGY

PREFACE

The modified HEC-1 program is capable of performing two basic types of hydrologic analyses: 1) the evaluation of the overtopping potential of the dam; and 2) the estimation of the downstream hydrologic-hydraulic consequences resulting from assumed structural failures of the dam. Briefly, the computational procedures typically used in the dam overtopping analysis are as follows:

a. Development of an inflow hydrograph(s) to the reservoir.

b. Routing of the inflow hydrograph(s) through the reservoir to determine if the event(s) analyzed would overtop the dam.

c. Routing of the outflow hydrograph(s) from the reservoir to desired downstream locations. The results provide the peak discharge(s), time(s) of the peak discharge(s), and the maximum stage(s) of each routed hydrograph at the downstream end of each reach.

The evaluation of the hydrologic-hydraulic consequences resulting from an assumed structural failure (breach) of the dam is typically performed as shown below.

a. Development of an inflow hydrograph(s) to the reservoir.

b. Routing of the inflow hydrograph(s) through the reservoir.

c. Development of a failure hydrograph(s) based on specified breach criteria and normal reservoir outflow.

d Routing of the failure hydrograph(s) to desired downstream locations. The results provide estimates of the peak discharge(s), time(s) to peak and maximum water surface elevations of failure hydrographs for each location.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-16-79 PROJ. NO. 78-617-496

CHKD. BY DJS DATE 4-11-79 SHEET NO. 1 OF 22

GAI CONSULTANTS, INC
Engineers • Geologists • Planners
Environmental Specialists

DAM STATISTICS

HEIGHT OF DAM ≈ 36 FT (FIELD MEASURED)

MAXIMUM POOL STORAGE CAPACITY ≈ 300 (SEE SHEET 5)
@ TOP OF DAM

NORMAL POOL STORAGE CAPACITY ≈ 230 AC-FT (SEE NOTE 1)

DRAINAGE AREA ≈ 0.34 SQ. MI. [PLANIMETERED OFF USGS 7.5 MINUTE QUAD: GREENSBURG, PA.]

NOTE 1: STORAGE VALUE OBTAINED FROM THE "REPORT UPON THE JEANNETTE DAM OF THE WESTMORELAND WATER COMPANY" AS FOUND IN PENNDER FILES. THE REPORT INDICATES THAT THE STORAGE CAPACITY IS 75 MILLION GALLONS.

DAM CLASSIFICATION

DAM SIZE - SMALL (REF 1, TABLE 1)

HAZARD CLASSIFICATION - HIGH (FIELD OBSERVATION)

REQUIRED SDF - 1/2 PMF TO PMF (REF 1, TABLE 3)

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-16-79 PROJ. NO. 78-617-486

CHKD. BY DJS DATE 4-11-79 SHEET NO. 2 OF 22

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HYDROGRAPH PARAMETERS

LENGTH OF LONGEST WATERCOURSE (L) ≈ 0.80 MI

L_{CA} ≈ 0.37 MI (MEASURED ALONG THE LONGEST WATERCOURSE FROM THE DAM TO THE CENTROID OF THE BASIN)

NOTE 2: VALUES OF L AND L_{CA} ARE MEASURED FROM THE USGS 7.5 MINUTE GREENSBURG, PA QUAD. ALSO, ALL VARIABLES ARE DEFINED IN REFERENCE 2 IN THE SECTION ENTITLED "SNYDER SYNTHETIC UNIT HYDROGRAPH"

$C_t \approx 1.60$
$C_p \approx 0.50$ } [SUPPLIED BY COE; ZONE 29, OHIO RIVER BASIN]

t_p = SNYDER'S STANDARD LAG $\approx 1.60\,(L \cdot L_{CA})^{0.3}$

$\therefore\ t_p \approx 1.6\,(0.80 \times 0.37)^{0.3} \approx 1.11$ HR

RESERVOIR SURFACE AREAS AND STORAGE VOLUMES

- SURFACE AREA (SA) @ NORMAL POOL EL. 1168 FT ≈ 9.2 ACRES

NOTE 3: SINCE DESIGN DRAWINGS WERE NOT AVAILABLE FOR THIS FACILITY, NORMAL POOL ELEVATION WAS ASSUMED TO BE 1168 FT (MSL) AS FOUND ON THE USGS - GREENSBURG, PA QUAD. THE RESERVOIR SURFACE AREA DEPICTED ON THIS QUAD MEASURED ABOUT 9.2 ACRES. THE NORMAL POOL ELEVATION IS THE ASSUMED DATUM THROUGHOUT THE CALCULATIONS, WITH ALL OTHER ELEVATIONS RELATIVE TO IT.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-16-79 PROJ. NO. 78-617-436

CHKD. BY DJS DATE 4-11-79 SHEET NO. 3 OF 22

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- RESERVOIR LENGTH ≈ 1100 FT @ NORMAL POOL

AVERAGE RESERVOIR WIDTH ≈ 365 FT @ NORMAL POOL, SINCE RESERVOIR WIDTH IS APPROXIMATELY 500 FT FOR THE FIRST 500 FT OF DISTANCE UPSTREAM FROM THE DAM AND THEN IS NECKED DOWN QUICKLY TO ABOUT 250 FT OF WIDTH FOR THE REMAINING RESERVOIR LENGTH ⇒ AVG WIDTH ≈ [(500×500)+(250×600)] / 1100

∴ REPRESENTATIVE SURFACE AREA ≈ LENGTH × AVG WIDTH
≈ (1100 FT)(365 FT) / 43560 $\frac{FT^2}{AC}$
≈ 9.2 ACRES

∴ REPRESENTATIVE AREA = ASSUMED ACTUAL AREA @ NORMAL POOL
⇒ ASSUMED DIMENSIONS ARE GOOD

- ASSUME THAT A RESERVOIR CROSS-SECTION TAKEN PARALLEL TO THE DAM CREST IS PARABOLIC IN SHAPE WITH AREA DEFINED BY:

$$A = \tfrac{4}{3}(D)\left(\tfrac{RW}{2}\right) = \tfrac{2}{3}D(RW) \quad \text{(REF 14, PG 13)}$$

WHERE D = DEPTH OF RESERVOIR IN FT, AND
RW = TOP WIDTH OF RESERVOIR SECTION IN FT.

FURTHER, ASSUME THAT: THE MAXIMUM RESERVOIR DEPTH BELOW NORMAL POOL ≈ 32 FT (= HEIGHT OF DAM OF 36 FT, MINUS ≈ 3 FT FROM THE TOP OF DAM TO NORMAL POOL, MINUS ≈ 1 FT DUE TO THE NATURAL VALLEY BED SLOPE BETWEEN THE UPSTREAM AND DOWNSTREAM EMBANKMENT TOES), AND THAT BOTH RESERVOIR LENGTH AND AVERAGE RESERVOIR WIDTH VARY LINEARLY BETWEEN D = 0 FT AND D = 32 FT.

$\frac{\Delta RL}{\Delta D}$ = Δ RESERVOIR LENGTH PER FOOT OF RESERVOIR DEPTH = $\frac{1100\ FT}{32\ FT}$ ≈ 34.4 FT

SUBJECT DAM SAFETY INSPECTION

JEANNETTE DAM

BY WJV DATE 3-16-79 PROJ. NO. 78-617-486

CHKD. BY DJS DATE 4-11-79 SHEET NO. 4 OF 22

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$\frac{\Delta RW}{\Delta D}$ = Δ AVERAGE RESERVOIR WIDTH PER FOOT OF RESERVOIR DEPTH
= $\frac{365 \text{ FT}}{32 \text{ FT}} \approx 11.4$ FT/FT

- FINALLY, ASSUME THAT THE RESERVOIR CROSS-SECTIONAL AREA VARIES LINEARLY FROM A @ THE EMBANKMENT TO 0 @ THE UPSTREAM END OF THE RESERVOIR

- THEREFORE @ NORMAL POOL, THE COMPUTED STORAGE VOLUME IS (D = 32 FT):

$$V = \left(\frac{A + 0.0\,FT^2}{2}\right) \times \left(\underbrace{\frac{\Delta RL}{\Delta D}}_{34.4 \text{ FT/FT AS ON SHEET 3}} \times 32\,FT\right) / 43560\ FT^2/AC$$

$$A = (2/3)(32\,FT)\left(\underbrace{\frac{\Delta RW}{\Delta D}}_{11.4 \text{ FT/FT AS ABOVE}} \times 32\,FT\right) = 2/3\,(32)(365) \approx 7787\ FT^2$$

$$V = \left(\frac{7787\,FT^2 + 0\,FT^2}{2}\right)(1100\,FT) / 43560\ \frac{FT^2}{AC} \approx 98.3\ AC\text{-}FT$$

- SINCE THE ACTUAL REPORTED STORAGE CAPACITY VALUE $\approx$ 230 AC-FT (SHEET 1) $\Rightarrow$ CORRECTION FACTOR TO BE APPLIED TO ALL COMPUTED STORAGE VALUES = 230/98.3 $\approx$ 2.34

- THE RESERVOIR ELEVATION - STORAGE RELATIONSHIP GIVEN ON THE NEXT PAGE IS BASED ON THE ABOVE ASSUMPTIONS

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-19-79 PROJ. NO. 79-617-436

CHKD. BY DJS DATE 4-11-79 SHEET NO. 5 OF 22

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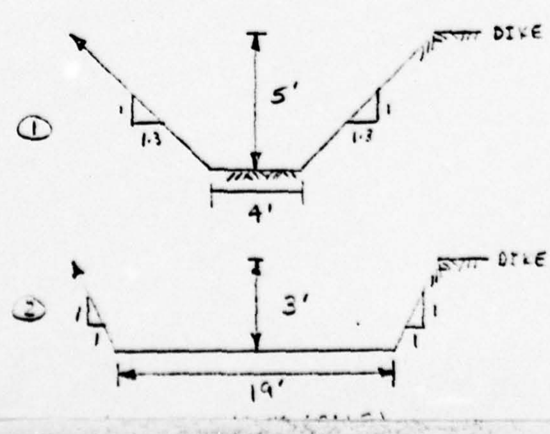
- ELEVATION-STORAGE RELATIONSHIP:

	ELEVATION (FT)	MAXIMUM RESERVOIR DEPTH D (FT)	AVERAGE RESERVOIR WIDTH RW (FT)	MAXIMUM RESERVOIR X-SECT AREA A (FT^2)	MAXIMUM RESERVOIR LENGTH RL (FT)	COMPUTED STORAGE VOLUME V (A-F)	CORRECTED STORAGE VOLUME V_c (A-F) } V × 2.34
	1136	0	–	–	–	0	0
	1141	5	57	190	172	0.4	0.9
	1146	10	114	760	344	3.0	7.0
	1151	15	171	1710	516	10.1	23.7
	1156	20	228	3040	688	24.0	56.2
	1161	25	285	4750	860	46.9	109.7
	1166	30	342	6840	1032	81.0	189.6
NORMAL POOL –	1168	32	365	7737	1100	95.3	230.0
	1169	33	376	8272	1135	107.8	252.2
	1170	34	388	8795	1170	118.1	276.4
TOP OF DAM –	1171	35	399	9310	1204	128.7	301.1
	1172	36	410	9840	1238	139.8	327.2
	1173	37	422	10409	1273	152.1	355.9

NOTE: THE MAXIMUM STORAGE IN THE DIVERSION CANAL IS ON THE ORDER OF 2 A-F (BASED ON THE TWO REPRESENTATIVE SECTIONS SKETCHED BELOW). SECTION ① IS REPRESENTATIVE OF ≈ 400 FT OF THE CANAL, AND SECTION ② IS REPRESENTATIVE OF THE REMAINING 1100 FT OF CANAL:

FIELD MEASURED



$$V = \{400[(4)(5) + 1.3(5)^2] + 1100[(19)(3) + 1(3)^2]\}/43560$$

$V \approx 2.1$ AF ⇒ NEGLECT POSSIBLE DIVERSION CANAL STORAGE

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PMP CALCULATIONS

- APPROXIMATE RAINFALL INDEX = 24 IN. (REF 3, FIG 1)
 (CORRESPONDING TO A DURATION OF 24 HR AND AN AREA OF 200 SQ MI LOCATED IN SOUTHWESTERN PENNSYLVANIA)

- DEPTH - AREA - DURATION ZONE #7 (REF 3, FIG 1)

- DRAINAGE AREA = 0.34 SQ MI ⇒ ASSUME THAT DATA CORRESPONDING TO A 10 SQ MI AREA IS REPRESENTATIVE OF THIS BASIN:

DURATION (HR)	PERCENT OF INDEX RAINFALL (%)
6	102.0
12	120.0
24	130.0
48	140.0

(REF 3, FIG 2)

- HOP BROOK FACTOR (ADJUSTMENT FOR BASIN SHAPE AS WELL AS FOR THE LESSER LIKELIHOOD OF A SEVERE STORM CENTERING OVER A SMALLER BASIN) CORRESPONDING TO A DA = 0.34 SQ MI (< 10 SQ MI) ≈ 0.80

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-19-79 PROJ. NO. 79-617-486
CHKD. BY DJS DATE 4-11-79 SHEET NO. 7 OF 22

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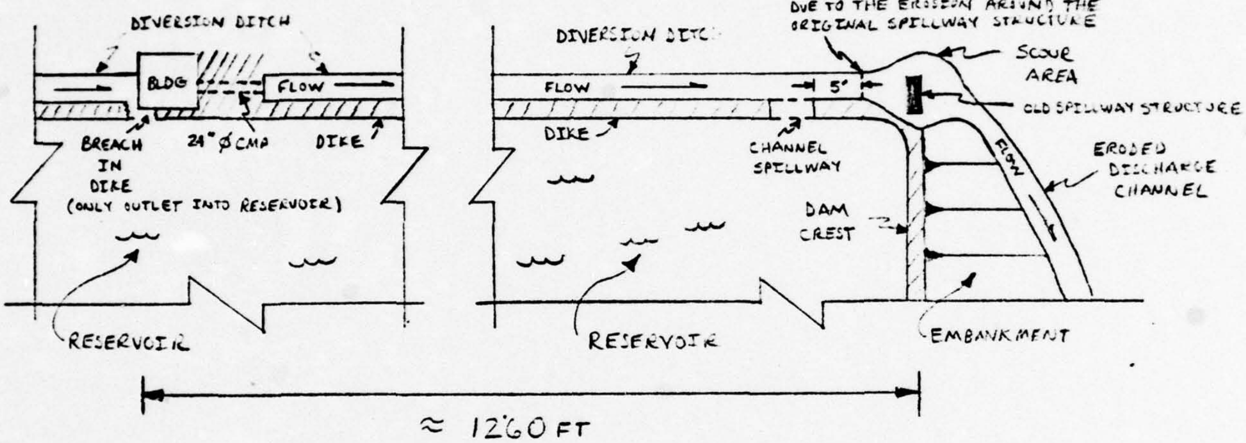
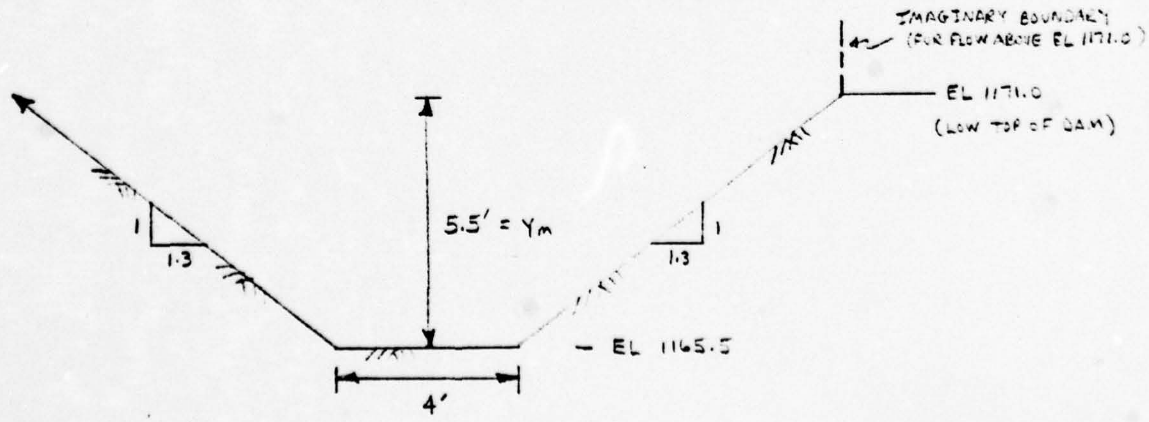
SPILLWAY CAPACITY

- PLAN VIEW OF SPILLWAY VICINITY: (NOT TO SCALE)
(SEE APPENDIX F, FIG I FOR SKETCH OF ENTIRE RESERVOIR AREA)



- DISCHARGE CONTROL SECTION DIMENSIONS: (NOT TO SCALE)
(@ ≈ 5' DS FROM CHANNEL SPILLWAY IN ABOVE SKETCH)

THE CONTROL SECTION IS VERY UNSTABLE SINCE IT IS FOUNDED IN EARTH AND IS A PRODUCT OF THE EROSION AROUND THE ACTUAL SPILLWAY STRUCTURE. HOWEVER, IT WILL BE ASSUMED THAT THE SECTION IS STABLE IN THIS ANALYSIS.



SUBJECT: DAM SAFETY INSPECTION
JEANNETTE DAM

BY: WJV DATE: 3-20-79 PROJ. NO.: 78-617-486
CHKD. BY: DJS DATE: 4-11-79 SHEET NO.: 9 OF 22

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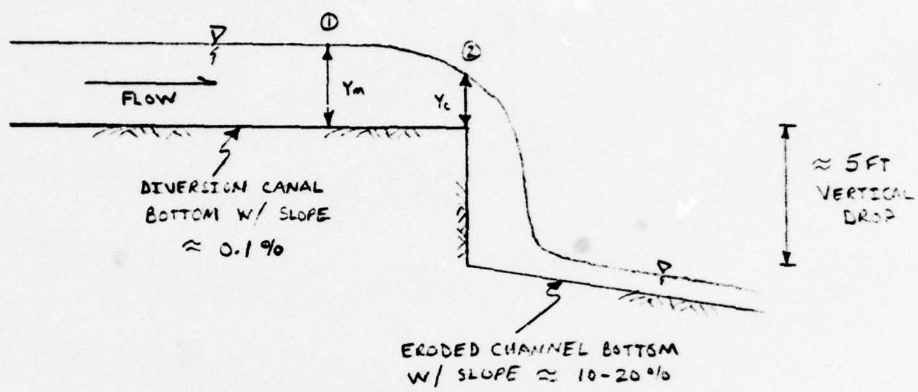
- CHANNEL PROFILE IN CONTROL SECTION VICINITY: (NOT TO SCALE)



- CONTROL SECTION IS LOCATED @ ② ABOVE, W/ Y_c = CRITICAL DEPTH (Y_m = MAXIMUM CANAL DEPTH PRIOR TO DAM EMBANKMENT OVERTOPPING ≈ 5.5 FT)

- ASSUMING THAT THE WATER SURFACE PROFILE PASSES THROUGH CRITICAL DEPTH @ SECTION ②: ENERGY BALANCE BETWEEN ① AND ② ⇒

$$Y_m + \frac{v_1^2}{2g} + \cancel{z_1} = Y_c + \frac{v_c^2}{2g} + \cancel{z_2} + \cancel{H_L}^{\to 0} \qquad \text{(REF 7, PG 40)}$$

WHERE v_1 = DIVERSION CANAL VELOCITY IN FPS,
z_1 = ELEVATION @ ① IN FT,
v_c = CRITICAL VELOCITY IN FPS,
z_2 = ELEVATION @ ② IN FT, AND
H_L = HEAD LOSS BETWEEN ① AND ② ≈ 0

- SINCE $z_1 - z_2 \approx 0$ (SECTIONS ① AND ② ARE CLOSE ENOUGH TOGETHER

$$Y_m + \frac{v_1^2}{2g} = Y_c + \frac{v_c^2}{2g} \qquad \text{W/ } Y_m = 5.5 \text{ FT}$$

- ASSUMING THAT $v_1 = \frac{1.49}{n} R^{2/3} S^{1/2}$ (MANNING EQ, REF 7, PG 99)

WHERE n = CHANNEL ROUGHNESS COEFFICIENT $\approx$ 0.030 (FROM FIELD INSPECTION AND REF 7, PG 112), R = HYDRAULIC RADIUS = $\frac{\text{FLOW AREA}}{\text{WETTED PERIMETER}}$, AND $S \approx$ SLOPE OF THE CANAL $\approx$ 0.001 (APPROXIMATE DESIGN VALUE IN PENNDER FILES)

$$R = A/P = \frac{(4 \times 5.5) + 1.3(5.5)^2}{4 + 2\sqrt{(1.3 \times 5.5)^2 + (5.5)^2}} \approx 2.78$$

(ASSUMING THAT THE CONTROL SECTION GEOMETRY ON SHEET 7 IS REPRESENTATIVE OF SECTION ① GEOMETRY)

$$\therefore v_1 = 1.49/0.030 \quad (2.78)^{2/3} \quad (0.001)^{1/2} \approx 3.1 \text{ FPS}$$

- THUS, $Y_m + v_1^2/2g = 5.5 + (3.1)^2/2g \approx 5.6 = y_c + v_c^2/2g$

FOR THE TRAPEZOIDAL SHAPED CONTROL SECTION W/ CRITICAL DEPTH $\Rightarrow$ $v_c^2/2g = \Delta_c/2$ (REF 7, PG 43)

WHERE Δ_c = HYDRAULIC DEPTH = $\frac{\text{FLOW AREA}}{\text{TOP WIDTH}}$ = A_c/W_c

$$A_c = 4y_c + [1.3y_c(y_c)] = 4y_c + 1.3y_c^2$$
$$W_c = 4 + [2(1.3y_c)] = 4 + 2.6y_c$$

$$\therefore 5.6 = y_c + \frac{\Delta_c}{2} = y_c + \frac{4y_c + 1.3y_c^2}{2(4+2.6y_c)} = y_c + \frac{4y_c + 1.3y_c^2}{8 + 5.2y_c}$$

SOLVE FOR y_c:

$$5.6(8 + 5.2y_c) = 8y_c + 5.2y_c^2 + 4y_c + 1.3y_c^2$$

$$0 = 6.5y_c^2 - 17.1y_c - 44.8$$

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-20-79 PROJ. NO. 79-617-496

CHKD. BY DJS DATE 4-11-79 SHEET NO. 10 OF 22

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$Y_c \approx 4.3$ FT

$$\therefore \frac{v_c^2}{2g} = \frac{4(4.3) + 1.3(4.3)^2}{8 + 5.2(4.3)} = 1.36 \Rightarrow v_c \approx 9.4$$

$$\therefore Q = A_c v_c = (41.2 \text{ FT}^2)(9.4 \text{ FPS}) \approx 388 \text{ CFS, SAY } 390 \text{ CFS}$$

- CAPACITY OF DISCHARGE SYSTEM ≈ 390 CFS

SPILLWAY RATING CURVE

- ASSUME THAT THE DIVERSION DITCH WATER LEVEL REACHES EL. 1168.5 BY THE TIME THE RESERVOIR LEVEL REACHES EL 1168.5 (0.5FT RISE IN RESERVOIR LEVEL ABOVE NORMAL POOL ⇒ 3.0 FT RISE IN DIVERSION DITCH WATER LEVEL). ALSO, ASSUME THAT ABOVE EL 1168.5, THE RESERVOIR AND DIVERSION DITCH LEVELS RISE AT THE SAME RATE.

- THEREFORE, THE DAM FACILITY DISCHARGES ARE CONTROLLED BY THE DIVERSION DITCH SECTION DEPICTED ON SHEET 7, W/ OUTFLOW'S DETERMINED AS ON SHEETS 8 TO 10.

- DIVERSION CANAL VELOCITIES (AS PER MANNING'S EQ, SHEET 9):

RESERVOIR ELEVATION (FT)	CANAL DEPTH (FT)	R (FT)	v (FPS)
1168.0	–	–	0
1168.5	3.0	1.71	2.2
1169.0	3.5	1.93	2.4
1169.5	4.0	2.15	2.6
1170.0	4.5	2.36	2.8
1170.5	5.0	2.57	2.9

RESERVOIR ELEVATION (FT)	CANAL DEPTH (FT)	R (FT)	v (FPS)
1171.0	5.5	2.78	3.1
1171.5	6.0	3.09	3.3
1172.0	6.5	3.39	3.5
1172.5	7.0	3.68	3.7

SUBJECT	DAM SAFETY INSPECTION
	JEANNETTE DAM
BY WJV	DATE 3-21-79	PROJ. NO. 78-617-496
CHKD. BY DJS	DATE 4-11-79	SHEET NO. 11 OF 22

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- RATING CURVE:

$$Y_1 + {v_1}^2/2g = Y_c + {v_c}^2/2g$$

WHERE Y_1 = DEPTH OF FLOW IN DIVERSION CANAL UPSTREAM OF THE CONTROL SECTION IN FT,

v_1 = DIVERSION CANAL VELOCITY (SHEET 10) IN FPS,

Y_c = CORRESPONDING CRITICAL DEPTH IN CONTROL SECTION IN FT,

${v_c}^2/2g = A_c/2W_c = \frac{4Y_c + 1.3{Y_c}^2}{8 + 5.2Y_c}$ (SHEET 9) IN FT.

RESERVOIR ELEVATION (FT)	CANAL DEPTH Y_1 (FT)	v_1 (FPS)	${v_1}^2/2g$ (FT)	Y_c (FT)	A_c (FT)	v_c (FT)	Q (CFS)
1168.0	–	–	–	–	–	–	0
1168.5	3.0	2.2	0.1	2.3	16.1	7.2	120
1169.0	3.5	2.4	0.1	2.7	20.3	7.7	160
1169.5	4.0	2.6	0.1	3.1	24.9	8.2	200
1170.0	4.5	2.8	0.1	3.5	29.9	8.6	260
1170.5	5.0	2.9	0.1	3.9	35.4	9.0	320
1171.0	5.5	3.1	0.1	4.3	41.2	9.4	390
1171.5	6.0	3.3	0.2	4.7	47.5	9.7	460
1172.0	6.5	3.5	0.2	5.1	54.2	10.1	550
1172.5	7.0	3.7	0.2	5.5	61.3	10.4	640

SUBJECT	DAM SAFETY INSPECTION JEANNETTE DAM		
BY WJV	DATE 3-21-79	PROJ. NO. 79-617-496	
CHKD. BY DJS	DATE 4-11-79	SHEET NO. 12	OF 22

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DAM EMBANKMENT RATING CURVE

ASSUME THAT THE EMBANKMENT ACTS LIKE A BROAD-CRESTED WEIR WHEN OVERTOPPED. DISCHARGES ARE DEFINED BY:

$$Q = CLH^{3/2}$$ (REF 5, PG 5-23)

WHERE Q = DISCHARGE IN CFS, L = EMBANKMENT LENGTH $\approx$ 430 FT (AS MEASURED IN THE FIELD), H = DEPTH OF WATER OVER THE EMBANKMENT IN FT, AND C = DISCHARGE COEFFICIENT = f (H/ℓ) w/ ℓ = BREADTH OF THE DAM CREST $\approx$ 3 FT (AS MEASURED IN THE FIELD)

RESERVOIR ELEVATION (FT)	H (FT)	H/ℓ (FT/FT)	C*	Q (CFS)
1171.0	–	–	–	0
1171.5	0.5	0.17	3.06	520
1172.0	1.0	0.33	3.[illegible]	1490
1172.5	1.5	0.50	3.09	2720

* VALUES OBTAINED FROM REF 12, PG 46

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 3-21-79 PROJ. NO. 79-617-496

CHKD. BY DJS DATE 4-11-79 SHEET NO. 13 OF 22

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TOTAL FACILITY RATING CURVE

TOTAL RATING CURVE Q = "SPILLWAY" Q + EMBANKMENT Q

RESERVOIR ELEVATION (FT)	SPILLWAY* Q (CFS)	EMBANKMENT** Q (CFS)	TOTAL Q (CFS)
1168.0	0	—	0
1168.5	120	—	120
1169.0	160	—	160
1169.5	200	—	200
1170.0	260	—	260
1170.5	320	—	320
1171.0	390	0	390
1171.5	460	520	980
1172.0	550	1480	2030
1172.5	640	2720	3360

*FROM SHEET 11
**FROM SHEET 12

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM
BY WJV DATE 3-22-79 PROJ. NO. 78-617-486
CHKD. BY DJS DATE 4-20-79 SHEET NO. 14 OF 22

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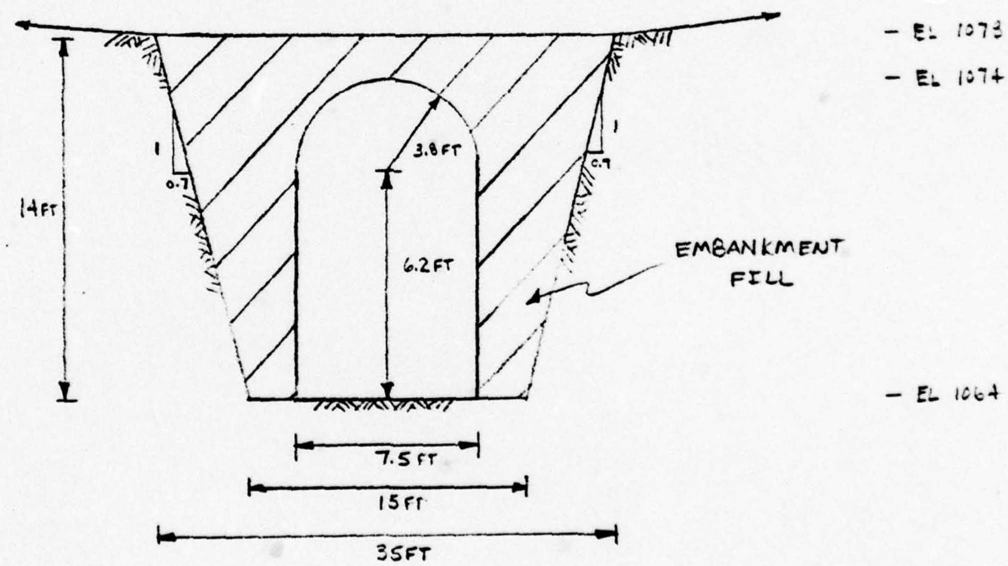
RATING CURVE FOR ARCH CULVERT @ DS SECTION 4

- SECTION 4 IS LOCATED ≈ 6600 FT DOWNSTREAM FROM THE DAM. ALTHOUGH THE NATURAL STREAM CHANNEL IN THE SECTION 4 AREA IS RELATIVELY WIDE, A ROAD EMBANKMENT WITH A NARROW ARCH CULVERT OPENING CAUSES FLOW TO BE CONSTRICTED @ SECTION 4. THE APPROXIMATE CROSS-SECTION CONFIGURATION IS GIVEN ON SHEET 18.

- ARCH DIMENSIONS ARE APPROXIMATELY: (NOT TO SCALE)



- APPROXIMATE CULVERT AND STREAM SLOPE ≈ 1.5% = 0.015 (FROM USGS QUAD)

- THE CULVERT RATING CURVE WAS COMPUTED VIA THE HEC-2 WATER SURFACE PROFILE COMPUTER PROGRAM.* HEC-2 CALCULATES BACKWATER CURVES BY THE STANDARD STEP METHOD (REF 7, PG 274-280) BASED ON MEASURED OR ESTIMATED CROSS-SECTION INFORMATION. CROSS-SECTION

* HEC-2 WATER SURFACE PROFILES (USER'S MANUAL), HYDROLOGIC ENGINEERING CENTER, US ARMY CORPS OF ENGINEERS, DAVIS, CALIF., NOV. 1976.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-10-79 PROJ. NO. 79-617-496

CHKD. BY DJS DATE 4-20-79 SHEET NO. 15 OF 22

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DATA INPUTTED INTO THE PROGRAM WAS OBTAINED FROM BOTH FIELD MEASUREMENT AND OBSERVATION; AND THE GREENSBURG, PA USGS QUAD.

THE BACKWATER CURVE WAS STARTED BY THE SLOPE-AREA METHOD (REF 7, PG 146) AT A SECTION LOCATED ≈ 200 FT DS FROM THE CULVERT. THE BACKWATER COMPUTATIONS CONTINUED UPSTREAM IN 50 FT INCREMENTS UNTIL THE BRIDGE WAS ENCOUNTERED. THE BRIDGE WAS MODELLED BY THE NORMAL BRIDGE ROUTINE (SEE REF ON SHEET 14) AND THE BACKWATER CALCULATIONS WERE THEN CONTINUED TO A SECTION LOCATED ≈ 50 FT US FROM THE BRIDGE. ALL CROSS-SECTIONS WERE SHAPED LIKE SECTION 4 (SHEET 13) W/ THE EMBANKMENT AREA REMOVED FOR THE NATURAL SECTIONS.

THE RESULTANT CULVERT RATING CURVE (DISCHARGE VS ELEVATION RELATIONSHIP) IS GIVEN BELOW. THE SUMMARY INPUT AND OUTPUT OF THE PROGRAM IS PROVIDED ON SHEETS A TO E OF THE SUMMARY INPUT / OUTPUT SHEETS.

ELEVATION (FT)	Q (CFS)	ELEVATION (FT)	Q (CFS)
1067.8	200	1093.1	4000
1070.1	400	1093.6	5000
1071.9	600	1094.0	6000
1073.4	800	1094.4	7000
1090.7	1000	1094.8	8000
1091.9	2000	1095.4	9000
1092.6	3000	1096.1	10000

SUBJECT DAM SAFETY INSPECTION

JEANNETTE DAM

BY WJV DATE 4-10-79 PROJ. NO. 79-617-432

CHKD. BY DJS DATE 4-20-79 SHEET NO. 16 OF 22

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CHANNEL STORAGE VALUES US OF RAILROAD EMBANKMENT

ASSUME THAT SECTION 4 GEOMETRY (W/ EMBANKMENT REMOVED) IS REPRESENTATIVE OF ≈ 1600 FT OF CHANNEL US FROM THE RAILROAD BRIDGE EMBANKMENT. STORAGE VOLUME WITHIN THIS REACH IS THEN GIVEN BY THE CROSS-SECTIONAL AREA MULTIPLIED BY 1600 FT :

$$V = (A \times 1600\,FT) / 43560\ FT^2/AC$$

ELEVATION (FT)	A* (FT²)	V (AC-FT)
1063.7	–	0
1068.7	92.3	3.4
1071.5	160.7	5.9
1073.8	222.2	8.2
1075.9	287.0	10.5
1080.7	650.4	23.9
1081.9	859.2	31.6
1082.7	1003.2	36.8
1083.2	1111.4	40.8
1083.7	1209.9	44.4
1084.2	1317.4	48.4
1084.6	1414.3	51.9
1085.0	1508.8	55.4
1085.7	1678.1	61.6
1086.4	1852.8	68.1

* ELEVATION VS AREA INFORMATION OBTAINED FROM HEC-2 OUTPUT, SHEET E, SUMMARY INPUT / OUTPUT SHEETS.

SUBJECT	DAM SAFETY INSPECTION JEANNETTE DAM		
BY WJV	DATE 4-10-79	PROJ. NO.	
CHKD. BY DJS	DATE 4-20-79	SHEET NO. 17 OF 22	

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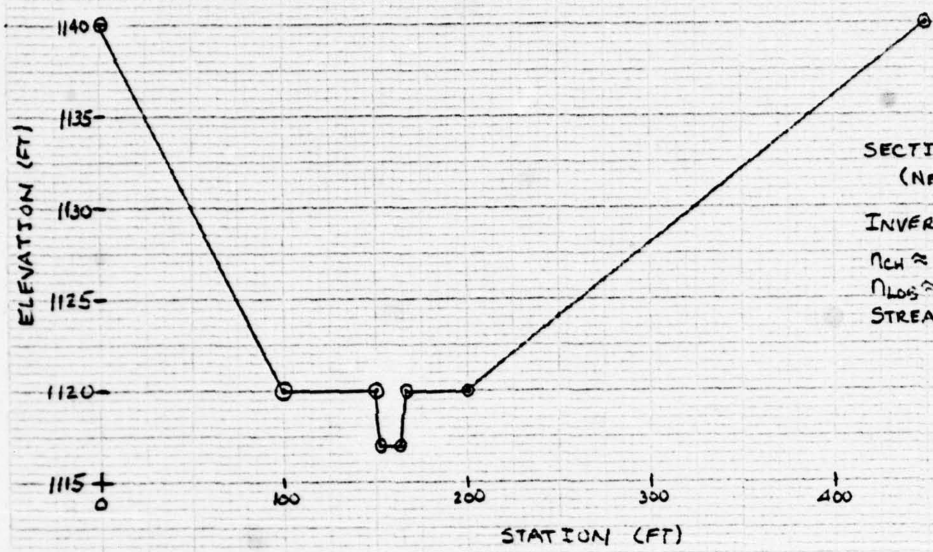
DISCHARGE - STORAGE RELATIONSHIP @ SECT 4

THE DISCHARGE - STORAGE RELATIONSHIP GIVEN BELOW WILL BE DIRECTLY INPUT INTO HEC-1 FOR SECTION 4 IN PLACE OF INPUTTING ONLY THE SECTION GEOMETRY AS WILL BE DONE FOR SECTIONS 2 AND 3.

Q (CFS)	V* (AC-FT)
0	0
200	2.8
400	4.7
600	6.2
800	7.8
1000	23.9
2000	31.6
3000	36.2
4000	40.0
5000	43.7
6000	46.8
7000	50.2
8000	53.7
9000	58.9
10000	65.3

* STORAGE VOLUMES INTERPOLATED FROM TABLE ON SHEET 16, BASED ON ELEVATIONS ON SHEET 15.

DOWNSTREAM ROUTING SECTIONS



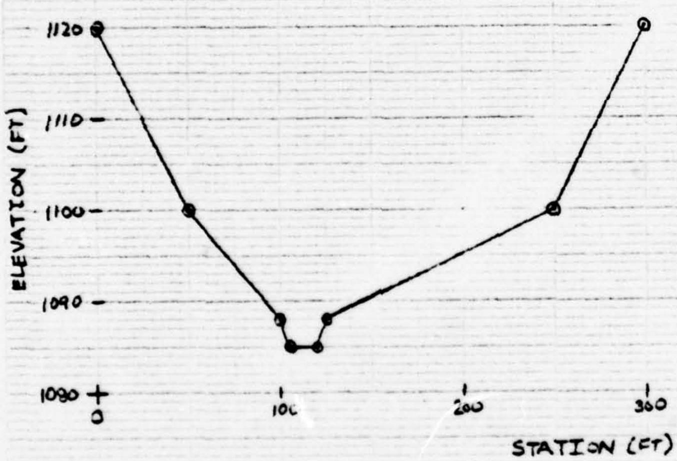
SECTION 2 @ ≈ 1500 FT DS OF DAM
(NEAR CONFLUENCE W/ A LARGER STREAM

INVERT ELEVATION ≈ 1117 FT

n_{CH} ≈ 0.035 (FIELD ESTIMATE)

n_{LOB} ≈ n_{ROB} ≈ 0.125 (FIELD ESTIMATE)

STREAM SLOPE ≈ 2.1 % (USGS TOPO)



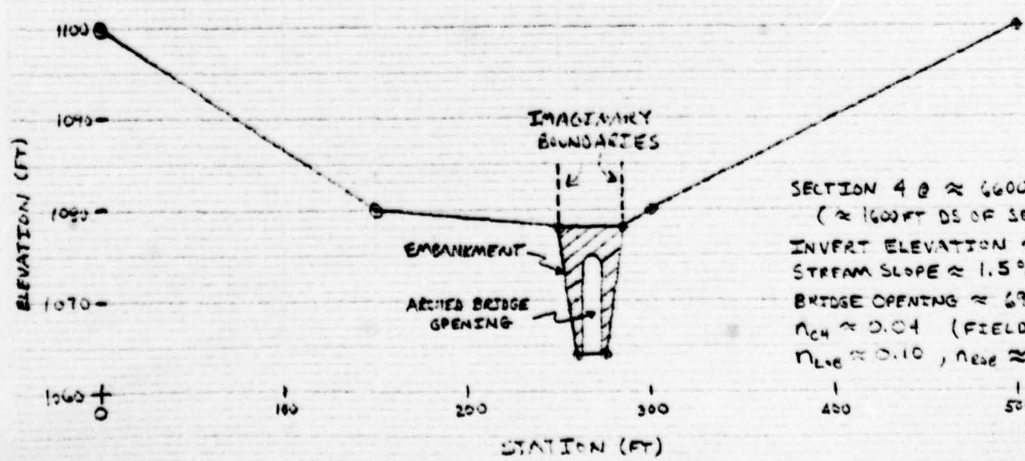
SECTION 3 @ ≈ 5000 FT DS OF DAM
(≈ 3500 FT DS OF CONFLUENCE)

INVERT ELEVATION ≈ 1085 FT

n_{CH} ≈ 0.035 (FIELD ESTIMATE)

n_{LOB} ≈ 0.125 ; n_{ROB} ≈ 0.07 (FIELD ESTIMATES)

STREAM SLOPE ≈ 1.0% (USGS TOPO)



SECTION 4 @ ≈ 6600 FT DS OF DAM
(≈ 1600 FT DS OF SECTION 3)

INVERT ELEVATION ≈ 1064

STREAM SLOPE ≈ 1.5 % (USGS TOPO)

BRIDGE OPENING ≈ 69.2 FT^2 (FROM DIMENSIONS)

n_{CH} ≈ 0.04 (FIELD ESTIMATE)

n_{LOB} ≈ 0.10 , n_{ROB} ≈ 0.07 (FIELD ESTIMATES)

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-11-79 PROJ. NO. 79-617-436

CHKD. BY DLB DATE 4-20-79 SHEET NO. 19 OF 22

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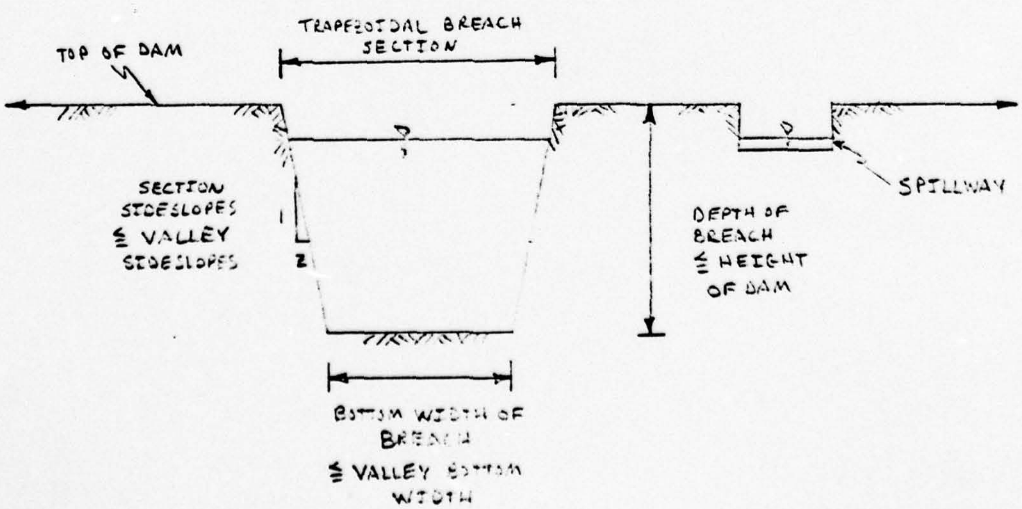
BREACHING ASSUMPTIONS

ALTHOUGH THE DAM IS NOT OVERTOPPED BY THE 1/2 PMF, THE POSSIBILITY OF EMBANKMENT FAILURE CAUSED BY FLOODS OF LESS THAN 1/2 PMF MAGNITUDE STILL EXISTS. FAILURE COULD BE CAUSED BY ACCELERATED TOE EROSION WHICH WILL OCCUR UNDER GREATER THAN NORMAL FLOWS, DUE TO THE PATH OF THE UNLINED OUTFLOW CHANNEL ALONG THE TOE. THE EMBANKMENT COULD EXPERIENCE A SUDDEN SLUMP DUE TO THE REMOVAL OF THE TOE MATERIAL, WITH QUICK DOWNCUTTING OF THE RESULTING LOOSE, SLUMPED FILL.

IN ORDER TO MODEL THIS TYPE OF FAILURE W/ HEC-1, A RELATIVELY SWIFT DOWNCUTTING UNDER 1/2 PMF CONDITIONS WILL BE EVALUATED. THE INITIATION OF BREACHING WILL BE AT THE APPROXIMATE RESERVOIR ELEVATION CORRESPONDING TO THE PEAK 1/2 PMF DISCHARGE.

- TYPICAL BREACH SECTION:



SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-12-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. 20 OF 22

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- HEC-1-DAM BREACHING ANALYSIS INPUTS:

PLAN NUMBER AND COMMENT	BREACH BOTTOM WIDTH (FT)	MAX. BREACH DEPTH (FT)	SECTION SIDESLOPES	* BREACH TIME (HR)	** WSEL @ START OF FAILURE (FT)
① MIN SECT, REPRESENTATIVE TIME	0	35	0.5 TO 1	0.5	1170.4
② MAX SECT, "	150	35	4 TO 1	0.5	1170.4
③ AVG SECT, "	75	35	2 TO 1	0.5	1170.4
④ AVG SECT, PROLONGED TIME	75	35	2 TO 1	1.0	1170.4

* BREACH TIME = TOTAL TIME NECESSARY TO REACH FINAL BREACH DIMENSION

** WSEL ≈ CORRESPONDING TO 1/2 PMF PEAK OUTFLOW (SUMMARY INPUT/OUTPUT SHEETS, SHEET L)

- THE ABOVE ASSUMPTIONS ARE BASED SOMEWHAT ON INFORMATION CONCERNING EARTH DAM BREACHING PROVIDED BY THE COE, BALTIMORE DISTRICT, AND ALSO ON THE PHYSICAL CONSTRAINTS OF THE DAM AND SURROUNDING TERRAIN:

CONSTRAINT	VALUE
- HEIGHT OF EMBANKMENT	36 FT ON DS SIDE ≈ 35 FT ON US SIDE (SHEET 3)
- EMBANKMENT CREST LENGTH (W/O SPILLWAY)	≈ 490 FT (FIELD MEASURED)
- VALLEY BOTTOM WIDTH @ ℄ DAM	≈ 150 FT "
- VALLEY SIDESLOPES	≈ 5 TO 1 (USGS TOPO MAP) BOTH LEFT AND RIGHT SIDES

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-17-79 PROJ. NO. 78-617-436

CHKD. BY DLB DATE 4-20-79 SHEET NO. 21 OF 22

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HEC-1-DAM BREACHING ANALYSIS OUTPUT :

RESERVOIR DATA

UNDER 1/2 PMF BASE CONDITIONS

*PLAN NUMBER	VARIABLE BREACH BOTTOM WIDTH (FT)	ACTUAL MAX. FLOW DURING FAIL TIME (CFS)	CORRESPONDING TIME OF FLOW (HR)	INTERPOLATED OR HEC-1 ROUTED MAX FLOW DURING FAIL TIME (CFS)	CORRESPONDING TIME OF FLOW (HR)	ACTUAL PEAK FLOW THROUGH DAM (CFS)	CORRESPONDING TIME OF PEAK (HR)	TIME OF INITIAL BREACH (HR)
①	0	5347	42.50	5347	42.50	5347	42.50	42.00
②	150	12558	42.28	10638	42.17	**12558	42.28	42.00
③	75	11676	42.33	11676	42.33	**11676	42.33	42.00
①	75	6397	42.50	6397	42.50	6387	42.50	42.00

* SEE TABLE ON SHEET 20

** ACTUAL HEC-1 PEAK FLOW FOR PLAN ② ≈ 55,270 CFS , AND THAT FOR PLAN ③ ≈ 27,640 CFS DUE TO "NON-CONVERGENCE" ERRORS @ TIME 42.83 HR IN BOTH CASES. THEREFORE, FROM ALL OTHER INDICATIONS, THE REAL PEAK FLOW OCCURRED DURING THE BREACH. ALL DOWNSTREAM ROUTING OUTPUT WILL, THEN, BE REFERRED BACK TO THE TABLE ABOVE, RATHER THAN TO THE ACTUAL HEC-1 OUTPUT.

SUBJECT DAM SAFETY INSPECTION

JEANNETTE DAM

BY WJV DATE 4-17-79 PROJ. NO. 78-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. 22 OF 22

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HEC-1-DAM BREACHING ANALYSIS OUTPUT :

DOWNSTREAM ROUTING DATA

UNDER 1/2 PMF BASE CONDITIONS

1. PLAN NUMBER	VARIABLE BREACH BOTTOM WIDTH (FT)	OUTPUT @ RR BLDG SECTION (5000 FT DS OF DAM) 2. PEAK FLOW (CFS)	3. CORRESPONDING WSEL (FT)	4. WSEL W/O BREACH (FT)	5. ΔELEV (FT)	OUTPUT @ BRDG EMBANKMENT SECT. (6600 FT DS OF DAM) 2. PEAK FLOW (CFS)	3. CORRESPONDING WSEL (FT)	4. WSEL W/O BREACH (FT)	5. ΔELEV (FT)
①	0	4381	1093.8	1087.3	+6.5	4327	1093.3	1069.1	+14.2
②	150	8679	1096.8	1087.3	+9.5	8732	1095.2	1069.1	+16.1
③	75	8491	1096.7	1087.3	+9.4	8871	1095.3	1069.1	+16.2
④	75	5939	1095.0	1087.3	+7.7	6059	1094.0	1069.1	+14.9

1. SEE TABLE ON SHEET 20
2. ESTIMATED FROM OUTPUT FOR FLOWS PRIOR TO TIME 42.93 HR.
3. ESTIMATED WATER SURFACE ELEVATION BASED ON PEAK FLOW AND OTHER OUTPUT
4. OBTAINED FROM OVERTOPPING ANALYSIS OUTPUT (SHEET L) FOR THE 1/2 PMF W/O BREACHING
5. ΔELEV = CORRESPONDING WSEL − WSEL W/O BREACH

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. A OF T

GAI CONSULTANTS, INC
Engineers • Geologists • Planners
Environmental Specialists

SUMMARY INPUT/OUTPUT SHEETS

RATING CURVE
FOR DOWNSTREAM
SECTION 4
VIA HEC 2 :
INPUT AND OUTPUT

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T1 DAM SAFETY INSPECTION
T2 TAILWATER ON RAILROAD CULVERT DOWNSTREAM OF JEANNETTE DAM
T3      JEANNETTE DAM

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

        0.       2.        0.        0.   0.015000      0.0       0.0        0.   1065.000     0.0

J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    1.000       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

   38.000    39.000    40.000    41.000    42.000    43.000     1.000     2.000     3.000    25.000

J5  LPRNT      NUMSEC               ********REQUESTED SECTION NUMBERS********

  -10.000   -10.000       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
NC    0.0       0.0       0.0     0.200     0.400       0.0       0.0       0.0       0.0       0.0
QT 14.000   200.000   400.000   600.000   800.000  1000.000  2000.000  3000.000  4000.000  5000.000
QT 6000.000 7000.000  8000.000  9000.000 10000.000     0.0       0.0       0.0       0.0       0.0
NH  5.000     0.100   250.000     0.060   260.000     0.040   275.000     0.060   285.000     0.070
NH 500.000    0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

X1  1.000    10.000   264.000   271.500       0.0       0.0       0.0       0.0    -3.500       0.0
GR 1100.000   0.0    1080.000   150.000  1078.000   250.000  1064.000   260.000  1064.000   264.000
GR 1064.000 271.500  1064.000   275.000  1078.000   285.000  1080.000   300.000  1100.000   500.000

X1  2.000       0.0       0.0       0.0    50.000    50.000    50.000       0.0     0.800       0.0

X1  3.000       0.0       0.0       0.0    50.000    50.000    50.000       0.0     0.800       0.0

X1  4.000       0.0       0.0       0.0    50.000    50.000    50.000       0.0     0.800       0.0
NC    0.0       0.0       0.0     0.400     0.600       0.0       0.0       0.0       0.0       0.0
NH  5.000     0.100   250.000     0.060   260.000     0.040   275.000     0.060   285.000     0.070
NH 500.000    0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

X1  5.100       0.0       0.0       0.0    50.000    50.000    50.000       0.0     0.800       0.0
X3 10.000       0.0       0.0       0.0       0.0       0.0       0.0  1073.700  1073.700       0.0
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SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. B OF T

GAI CONSULTANTS, INC
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X1	5.110	13.000	264.000	271.500	5.000	5.000	5.000	0.0	0.0	0.0
X2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GR	15.000	0.0	1100.000	1100.000	150.000	1080.000	1080.000	250.000	1078.000	1078.000
GR	260.000	1076.000	1063.700	264.000	1078.000	1063.700	264.000	1078.000	1069.900	266.000
GR	1076.000	1073.200	267.800	1078.000	1073.700	269.500	1078.000	1073.200	271.500	1078.000
.	1069.900	271.500	1078.000	1063.700	275.000	1078.000	1063.700	285.000	1078.000	1078.000
GR	300.000	1080.000	1080.000	500.000	1100.000	1100.000	0.0	0.0	0.0	0.0
GR	1100.000	0.0	1080.000	150.000	1078.000	250.000	1063.700	260.000	1063.700	264.000
GR	1063.700	266.000	1063.700	267.800	1063.700	269.500	1063.700	271.500	1063.700	275.000
GR	1074.000	285.000	1080.000	300.000	1100.000	500.000	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.100	0.300	0.0	0.0	0.0	0.0	0.0
NH	5.000	0.100	250.000	0.060	260.000	0.040	275.000	0.060	285.000	0.070
NH	500.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	6.200	0.0	0.0	0.0	20.000	20.000	20.000	0.0	0.0	0.0
X2	0.0	0.0	0.0	0.0	0.0	0.0	1.000	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.400	0.600	0.0	0.0	0.0	0.0	0.0
NH	5.000	0.100	250.000	0.060	260.000	0.040	275.000	0.060	285.000	0.070
NH	500.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
X1	6.210	0.0	0.0	0.0	5.000	5.000	5.000	0.0	0.0	0.0
X3	10.000	0.0	0.0	0.0	0.0	0.0	0.0	1078.000	1078.000	0.0
X1	0.000	0.0	0.0	0.0	50.000	50.000	50.000	0.0	0.0	0.0
EJ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

JEANNETTE DAM

SUMMARY PRINTOUT

FLOW vs ELEVATION X-SECTIONAL

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	AREA
	1.000	0.0	0.0	0.0	1060.50	200.00	1062.38	0.0	1063.04	30.68
	1.000	0.0	0.0	0.0	1060.50	400.00	1063.33	0.0	1064.42	48.21
	1.000	0.0	0.0	0.0	1060.50	600.00	1064.09	0.0	1065.54	63.03
	1.000	0.0	0.0	0.0	1060.50	800.00	1064.75	1064.67	1066.51	76.62
	1.000	0.0	0.0	0.0	1060.50	1000.00	1065.34	1065.29	1067.38	89.35
*	1.000	0.0	0.0	0.0	1060.50	2000.00	1067.82	1067.82	1070.91	148.19
*	1.000	0.0	0.0	0.0	1060.50	3000.00	1069.87	1069.87	1073.69	203.16
*	1.000	0.0	0.0	0.0	1060.50	4000.00	1071.59	1071.59	1076.06	254.09
*	1.000	0.0	0.0	0.0	1060.50	5000.00	1073.13	1073.13	1078.15	303.47
*	1.000	0.0	0.0	0.0	1060.50	6000.00	1076.62	1076.62	1079.65	552.70
*	1.000	0.0	0.0	0.0	1060.50	7000.00	1077.52	1077.52	1080.56	696.29
*	1.000	0.0	0.0	0.0	1060.50	8000.00	1078.27	1078.27	1081.35	828.49
*	1.000	0.0	0.0	0.0	1060.50	9000.00	1078.92	1078.92	1082.06	949.65
*	1.000	0.0	0.0	0.0	1060.50	10000.00	1079.64	1079.64	1082.69	1092.55

SECTION @ ≈ 200FT DS FROM SECT. 4 (304)

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. C OF T

GAI CONSULTANTS, INC.
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FLOW vs ELEVATION

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	X-SECTIONAL AREA	
	2.000	50.00	0.0	0.0	1061.30	200.00	1063.14	0.0	1063.84	29.88	SECTION @ ≈ 150FT DS FROM SECT. 4 (304)
	2.000	50.00	0.0	0.0	1061.30	400.00	1064.07	0.0	1065.21	47.10	
	2.000	50.00	0.0	0.0	1061.30	600.00	1064.82	1064.77	1066.33	61.77	
	2.000	50.00	0.0	0.0	1061.30	800.00	1065.47	1065.46	1067.30	74.94	
*	2.000	50.00	0.0	0.0	1061.30	1000.00	1066.07	1066.07	1068.18	87.70	
*	2.000	50.00	0.0	0.0	1061.30	2000.00	1068.63	1068.63	1071.71	148.23	
*	2.000	50.00	0.0	0.0	1061.30	3000.00	1070.65	1070.65	1074.49	202.68	
*	2.000	50.00	0.0	0.0	1061.30	4000.00	1072.40	1072.40	1076.86	254.46	
*	2.000	50.00	0.0	0.0	1061.30	5000.00	1073.95	1073.95	1078.95	304.14	
*	2.000	50.00	0.0	0.0	1061.30	6000.00	1077.41	1077.41	1080.45	552.33	
*	2.000	50.00	0.0	0.0	1061.30	7000.00	1078.35	1078.35	1081.36	702.15	
*	2.000	50.00	0.0	0.0	1061.30	8000.00	1079.12	1079.12	1082.15	837.13	
*	2.000	50.00	0.0	0.0	1061.30	9000.00	1079.78	1079.78	1082.86	961.19	
*	2.000	50.00	0.0	0.0	1061.30	10000.00	1080.31	1080.31	1083.50	1066.37	
	3.000	50.00	0.0	0.0	1062.10	200.00	1063.95	0.0	1064.64	30.19	SECTION @ ≈ 100 FT DS FROM SECT. 4 (304)
	3.000	50.00	0.0	0.0	1062.10	400.00	1064.86	0.0	1066.01	46.95	
	3.000	50.00	0.0	0.0	1062.10	600.00	1065.60	1065.56	1067.14	61.11	
*	3.000	50.00	0.0	0.0	1062.10	800.00	1066.25	1066.25	1068.11	74.66	
*	3.000	50.00	0.0	0.0	1062.10	1000.00	1066.88	1066.88	1068.98	88.11	
*	3.000	50.00	0.0	0.0	1062.10	2000.00	1069.43	1069.43	1072.51	148.22	
*	3.000	50.00	0.0	0.0	1062.10	3000.00	1071.45	1071.45	1075.29	202.84	
*	3.000	50.00	0.0	0.0	1062.10	4000.00	1073.19	1073.19	1077.66	254.26	
*	3.000	50.00	0.0	0.0	1062.10	5000.00	1074.75	1074.75	1079.75	303.97	
*	3.000	50.00	0.0	0.0	1062.10	6000.00	1078.21	1078.21	1081.25	552.29	
*	3.000	50.00	0.0	0.0	1062.10	7000.00	1079.14	1079.14	1082.16	700.10	
*	3.000	50.00	0.0	0.0	1062.10	8000.00	1079.90	1079.90	1082.95	834.29	
*	3.000	50.00	0.0	0.0	1062.10	9000.00	1080.56	1080.56	1083.66	957.41	
*	3.000	50.00	0.0	0.0	1062.10	10000.00	1081.16	1081.16	1084.29	1076.34	
	4.000	50.00	0.0	0.0	1062.90	200.00	1064.74	0.0	1065.43	30.19	SECTION @ ≈ 50 FT DS FROM SECT. 4 (304)
	4.000	50.00	0.0	0.0	1062.90	400.00	1065.67	0.0	1066.82	46.95	
	4.000	50.00	0.0	0.0	1062.90	600.00	1066.50	0.0	1067.93	63.32	
*	4.000	50.00	0.0	0.0	1062.90	800.00	1067.06	1067.06	1068.91	74.75	
*	4.000	50.00	0.0	0.0	1062.90	1000.00	1067.68	1067.68	1069.78	88.03	
*	4.000	50.00	0.0	0.0	1062.90	2000.00	1070.23	1070.23	1073.31	148.22	
*	4.000	50.00	0.0	0.0	1062.90	3000.00	1072.25	1072.25	1076.09	202.78	
*	4.000	50.00	0.0	0.0	1062.90	4000.00	1073.99	1073.99	1078.46	254.36	
*	4.000	50.00	0.0	0.0	1062.90	5000.00	1075.55	1075.55	1080.55	303.94	
*	4.000	50.00	0.0	0.0	1062.90	6000.00	1079.01	1079.01	1082.05	552.18	
*	4.000	50.00	0.0	0.0	1062.90	7000.00	1079.94	1079.94	1082.96	700.96	
*	4.000	50.00	0.0	0.0	1062.90	8000.00	1080.71	1080.71	1083.75	835.35	
*	4.000	50.00	0.0	0.0	1062.90	9000.00	1081.37	1081.37	1084.46	958.59	
*	4.000	50.00	0.0	0.0	1062.90	10000.00	1081.95	1081.95	1085.09	1073.01	

SUBJECT DAM SAFETY INSPECTION

JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. D OF T

GAI CONSULTANTS, INC.

Engineers • Geologists • Planners
Environmental Specialists

FLOW vs ELEVATION

X-SECTIONAL

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	AREA	
*	5.100	50.00	0.0	0.0	1063.70	200.00	1066.51	1066.51	1067.91	21.05	DS SIDE OF SECT. 4 (304) BRDG EMBANKMENT
*	5.100	50.00	0.0	0.0	1063.70	400.00	1068.14	1068.14	1070.38	33.29	
*	5.100	50.00	0.0	0.0	1063.70	600.00	1069.51	1069.51	1072.45	43.61	
*	5.100	50.00	0.0	0.0	1063.70	800.00	1070.75	1070.75	1074.30	52.85	
*	5.100	50.00	0.0	0.0	1063.70	1000.00	1071.87	1071.87	1076.00	61.31	
*	5.100	50.00	0.0	0.0	1063.70	2000.00	1074.00	1074.00	1075.35	230.44	
*	5.100	50.00	0.0	0.0	1063.70	3000.00	1073.88	1073.88	1076.99	226.65	
*	5.100	50.00	0.0	0.0	1063.70	4000.00	1074.79	1074.79	1079.26	254.28	
*	5.100	50.00	0.0	0.0	1063.70	5000.00	1076.35	1076.35	1081.35	303.99	
*	5.100	50.00	0.0	0.0	1063.70	6000.00	1079.81	1079.81	1082.85	552.33	
*	5.100	50.00	0.0	0.0	1063.70	7000.00	1080.74	1080.74	1083.76	700.59	
*	5.100	50.00	0.0	0.0	1063.70	8000.00	1081.51	1081.51	1084.55	835.00	
*	5.100	50.00	0.0	0.0	1063.70	9000.00	1082.17	1082.17	1085.26	958.07	
*	5.100	50.00	0.0	0.0	1063.70	10000.00	1082.75	1082.75	1085.89	1074.35	
	5.110	5.00	1078.00	1100.00	1063.70	200.00	1067.66	0.0	1068.27	32.69	WITHIN SECT. 4 (304) BRDG EMBANKMENT
*	5.110	5.00	1078.00	1100.00	1063.70	400.00	1070.00	1067.93	1070.95	51.70	
*	5.110	5.00	1078.00	1100.00	1063.70	600.00	1071.38	1069.25	1073.03	59.31	
	5.110	5.00	1078.00	1100.00	1063.70	800.00	1072.26	1069.91	1074.79	64.08	
*	5.110	5.00	1078.00	1100.00	1063.70	1000.00	1079.38	1079.38	1080.37	172.79	
*	5.110	5.00	1078.00	1100.00	1063.70	2000.00	1080.59	1080.59	1081.67	346.19	
*	5.110	5.00	1078.00	1100.00	1063.70	3000.00	1081.25	1081.25	1082.52	456.51	
*	5.110	5.00	1078.00	1100.00	1063.70	4000.00	1081.96	1081.96	1083.20	583.19	
*	5.110	5.00	1078.00	1100.00	1063.70	5000.00	1082.30	1082.30	1083.80	647.35	
*	5.110	5.00	1078.00	1100.00	1063.70	6000.00	1082.61	1082.61	1084.35	707.26	
*	5.110	5.00	1078.00	1100.00	1063.70	7000.00	1083.06	1083.06	1084.83	795.62	
*	5.110	5.00	1078.00	1100.00	1063.70	8000.00	1083.48	1083.48	1085.29	883.81	
	5.110	5.00	1078.00	1100.00	1063.70	9000.00	1085.12	1083.71	1086.13	1254.44	
	5.110	5.00	1078.00	1100.00	1063.70	10000.00	1085.94	1084.13	1086.84	1452.56	
	6.200	20.00	1078.00	1100.00	1063.70	200.00	1067.83	0.0	1068.39	34.03	
	6.200	20.00	1078.00	1100.00	1063.70	400.00	1070.16	0.0	1071.08	52.60	
	6.200	20.00	1078.00	1100.00	1063.70	600.00	1071.65	1069.25	1073.22	60.79	
	6.200	20.00	1078.00	1100.00	1063.70	800.00	1072.68	1069.91	1075.04	66.45	
	6.200	20.00	1078.00	1100.00	1063.70	1000.00	1080.18	0.0	1080.61	282.09	
	6.200	20.00	1078.00	1100.00	1063.70	2000.00	1081.50	0.0	1081.95	498.83	
	6.200	20.00	1078.00	1100.00	1063.70	3000.00	1082.31	0.0	1082.84	647.86	
	6.200	20.00	1078.00	1100.00	1063.70	4000.00	1082.89	0.0	1083.54	759.86	
	6.200	20.00	1078.00	1100.00	1063.70	5000.00	1083.48	0.0	1084.19	883.96	
	6.200	20.00	1078.00	1100.00	1063.70	6000.00	1084.02	0.0	1084.78	1000.26	
	6.200	20.00	1078.00	1100.00	1063.70	7000.00	1084.44	0.0	1085.28	1093.22	
	6.200	20.00	1078.00	1100.00	1063.70	8000.00	1084.82	0.0	1085.74	1181.85	
	6.200	20.00	1078.00	1100.00	1063.70	9000.00	1085.55	0.0	1086.40	1358.87	
	6.200	20.00	1078.00	1100.00	1063.70	10000.00	1086.27	0.0	1087.06	1539.60	

SUBJECT DAM SAFETY INSPECTION

JEANNETTE DAM

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CHKD. BY DLB DATE 4-20-79 SHEET NO. E OF T

GAI CONSULTANTS, INC

Engineers • Geologists • Planners
Environmental Specialists

FLOW vs ELEVATION; X-SECTIONAL AREA

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	AREA
6.210	5.00	0.0	0.0	1063.70	200.00	1067.82	0.0	1068.47	30.90
6.210	5.00	0.0	0.0	1063.70	400.00	1070.14	0.0	1071.21	48.31
6.210	5.00	0.0	0.0	1063.70	600.00	1071.75	0.0	1073.28	60.36
6.210	5.00	0.0	0.0	1063.70	800.00	1073.43	0.0	1075.30	72.94
6.210	5.00	0.0	0.0	1063.70	1000.00	1080.68	0.0	1080.75	649.21
6.210	5.00	0.0	0.0	1063.70	2000.00	1081.88	0.0	1082.06	855.45
6.210	5.00	0.0	0.0	1063.70	3000.00	1082.62	0.0	1082.94	995.15
6.210	5.00	0.0	0.0	1063.70	4000.00	1083.13	0.0	1083.61	1097.48
6.210	5.00	0.0	0.0	1063.70	5000.00	1083.57	0.0	1084.22	1189.95
6.210	5.00	0.0	0.0	1063.70	6000.00	1084.02	0.0	1084.84	1286.39
6.210	5.00	0.0	0.0	1063.70	7000.00	1084.40	0.0	1085.39	1371.63
6.210	5.00	0.0	0.0	1063.70	8000.00	1084.75	0.0	1085.91	1451.89
6.210	5.00	0.0	0.0	1063.70	9000.00	1085.44	0.0	1086.64	1616.61
6.210	5.00	0.0	0.0	1063.70	10000.00	1086.12	0.0	1087.34	1789.55

US SIDE OF SECT. 4 (304) BRDG EMBANKMENT

ASSUMED SECT. 304 RATING CURVE

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	AREA
6.000	50.00	0.0	0.0	1063.70	200.00	1068.69	0.0	1068.76	92.25
6.000	50.00	0.0	0.0	1063.70	400.00	1071.54	0.0	1071.65	160.72
6.000	50.00	0.0	0.0	1063.70	600.00	1073.77	0.0	1073.90	222.22
6.000	50.00	0.0	0.0	1063.70	800.00	1075.90	0.0	1076.04	287.04
6.000	50.00	0.0	0.0	1063.70	1000.00	1080.69	0.0	1080.76	650.41
6.000	50.00	0.0	0.0	1063.70	2000.00	1081.90	0.0	1082.08	859.23
6.000	50.00	0.0	0.0	1063.70	3000.00	1082.66	0.0	1082.98	1003.15
6.000	50.00	0.0	0.0	1063.70	4000.00	1083.20	0.0	1083.67	1111.43
6.000	50.00	0.0	0.0	1063.70	5000.00	1083.66	0.0	1084.30	1209.92
6.000	50.00	0.0	0.0	1063.70	6000.00	1084.16	0.0	1084.94	1317.39
6.000	50.00	0.0	0.0	1063.70	7000.00	1084.58	0.0	1085.52	1414.26
6.000	50.00	0.0	0.0	1063.70	8000.00	1084.99	0.0	1086.07	1508.78
6.000	50.00	0.0	0.0	1063.70	9000.00	1085.68	0.0	1086.80	1678.08
6.000	50.00	0.0	0.0	1063.70	10000.00	1086.37	0.0	1087.50	1852.75

SECTION @ ≈ 50 FT US FROM SECT. 4 (304)

"NATURAL" SECT. 4 ELEVATION vs X-SECTIONAL AREA RELATIONSHIP

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. F OF T

GAI CONSULTANTS, INC

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OVERTOPPING

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DAM SAFETY INSPECTION
JEANNETTE DAM ******** OVERTOPPING ANALYSIS ********
10-MINUTE TIME STEP AND 48-HOUR STORM DURATION

                         JOB SPECIFICATION
  NO      NHR     NMIN     IDAY     IHR     IMIN    METRC    IPLT    IPRT    NSTAN
 288        0       10        0       0        0        0       0       0        0
                          JOPER     NWT    LROPT    TRACE
                              5       0        0        0

                   MULTI-PLAN ANALYSES TO BE PERFORMED
                      NPLAN= 1 NRTIO= 5 LRTIO= 1
     RTIOS=    .20     .30     .40     .50    1.00

**********      **********      **********      **********      **********

                       SUB-AREA RUNOFF COMPUTATION

   INFLOW INTO RESERVOIR

              ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                  1       0       0       0       0       0       1       0       0

                            HYDROGRAPH DATA
   IHYDG   IUHG   TAREA    SNAP   TRSDA   TRSPC   RATIO   ISNOW   ISAME   LOCAL
       1      1     .34    0.00     .34    0.00   0.000       0       1       0

                              PRECIP DATA
              SPFE     PMS      R6     R12     R24     R48     R72     R96
              0.00   24.00  102.00  120.00  130.00  140.00    0.00    0.00
TRSPC COMPUTED BY THE PROGRAM IS  .800

                                LOSS DATA
  LROPT  STRKR  DLTKR  RTIOL  ERAIN  STRKS  RTIOK  STRTL  CNSTL  ALSMX  RTIMP
      0   0.00   0.00   1.00   0.00   0.00   1.00   1.00    .05   0.00   0.00

                          UNIT HYDROGRAPH DATA
                     TP=  1.11    CP= .50    NTA=  0

                             RECESSION DATA
                   STRTQ=   -1.50   QRCSN=   -.05   RTIOR= 2.00
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 7.09 AND R= 9.15 INTERVALS

       UNIT HYDROGRAPH 53 END-OF-PERIOD ORDINATES, LAG=   1.11 HOURS, CP=  .50  VOL= 1.00
     5.      19.      38.      60.      89.      94.     100.      95.      85.      77.
    69.      61.      55.      49.      44.      40.      36.      32.      29.      26.
    23.      21.      18.      17.      15.      13.      12.      11.      10.       9.
     8.       7.       6.       6.       5.       4.       4.       4.       3.       3.
     2.       2.       2.       2.       2.       1.       1.       1.       1.       1.
     1.       1.       1.
```

INITIAL AND CONSTANT RAINFALL LOSSES AS PER COE

BASE FLOW PARAMETERS AS PER COE

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. G OF T

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END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	26.88	24.46	2.42	31603.
										(683.)(	621.)(	61.)(	894.90)

RESERVOIR INFLOW HYDROGRAPHS

PMF

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1000.	616.	213.	110.	31582.
CMS	28.	17.	6.	3.	894.
INCHES		16.85	23.30	24.00	24.00
MM		428.06	591.88	609.66	609.66
AC-FT		305.	422.	435.	435.
THOUS CU M		377.	521.	537.	537.

0.6 PMF

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	600.	370.	128.	66.	16949.
CMS	17.	10.	4.	2.	537.
INCHES		10.11	13.98	14.40	14.40
MM		256.83	355.13	365.80	365.80
AC-FT		183.	253.	261.	261.
THOUS CU M		226.	313.	322.	322.

HYDROGRAPH ROUTING

ROUTE THROUGH RESERVOIR

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
101	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	230.	-1

STAGE	1168.00	1168.50	1169.00	1169.50	1170.00	1170.50	1171.00	1171.50	1172.00	
FLOW	0.00	120.00	160.00	200.00	260.00	320.00	390.00	980.00	2030.00	
CAPACITY=	0.	1.	7.	24.	56.	110.	190.	230.	252.	276.
	301.	327.	356.							
ELEVATION=	1136.	1141.	1146.	1151.	1156.	1161.	1166.	1168.	1169.	1170.
	1171.	1172.	1173.							

CREL	SPWID	COQW	EXPW	ELEVL	COOL	CAREA	EXPL
1168.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID
1171.0	0.0	0.0	0.

RESERVOIR OUTFLOW HYDROGRAPHS

PMF

PEAK OUTFLOW IS 931. AT TIME 41.17 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	931.	553.	202.	104.	29947.
CMS	26.	16.	6.	3.	848.
INCHES		15.13	22.08	22.76	22.76
MM		384.29	560.72	578.09	578.09
AC-FT		274.	400.	412.	412.
THOUS CU M		338.	494.	509.	509.

OVERTOPPING OCCURS @ ≈ 0.6PMF

0.6PMF

PEAK OUTFLOW IS 388. AT TIME 42.50 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	388.	309.	121.	62.	17976.
CMS	11.	9.	3.	2.	509.
INCHES		8.45	13.25	13.66	13.66
MM		214.71	336.58	347.01	347.01
AC-FT		153.	240.	248.	248.
THOUS CU M		189.	296.	305.	305.

HYDROGRAPH ROUTING

ROUTE FROM RESERVOIR TO SECTION 2 * 1500 FT DS FROM DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
102	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
0.0	0.000	0.00	1	1	0	0		0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1.	0

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
.1250	.0350	.1250	1117.0	1140.0	1500.	.02100

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
0.00 1140.00 100.00 1120.00 150.00 1120.00 153.00 1117.00 163.00 1117.00
165.00 1120.00 200.00 1120.00 450.00 1140.00

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM
BY WJV DATE 4-19-79 PROJ. NO. 79-617-496
CHKD. BY DLB DATE 4-20-79 SHEET NO. I OF T

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STORAGE	0.00	.46	1.00	3.59	8.66	14.61	21.45	29.17	37.77
	57.63	68.88	81.01	94.03	107.93	122.72	138.38	154.94	172.37
OUTFLOW	0.00	82.88	263.76	622.29	1391.03	2511.73	3981.56	5810.49	8012.74
	13602.25	17023.61	20885.77	25206.05	30001.63	35289.56	41086.73	47409.83	54275.34
STAGE	1117.00	1118.21	1119.42	1120.63	1121.84	1123.05	1124.26	1125.47	1126.68
	1129.11	1130.32	1131.53	1132.74	1133.95	1135.16	1136.37	1137.58	1138.79
FLOW	0.00	82.88	263.76	622.29	1391.03	2511.73	3981.56	5810.49	8012.74
	13602.25	17023.61	20885.77	25206.05	30001.63	35289.56	41086.73	47409.83	54275.34

SECTION @ CONFLUENCE OF DAM'S OUTFLOW STREAM W/ LARGER STREAM

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	931.	553.	201.	104.	29896.
CMS	26.	16.	6.	3.	847.
INCHES		15.13	22.04	22.72	22.72
MM		384.20	559.76	577.11	577.11
AC-FT		274.	399.	412.	412.
THOUS CU M		338.	493.	508.	508.

PMF

MAXIMUM STORAGE = 6.

MAXIMUM STAGE IS 1121.1

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	388.	309.	121.	62.	17933.
CMS	11.	9.	3.	2.	508.
INCHES		8.45	13.22	13.63	13.63
MM		214.70	335.76	346.17	346.17
AC-FT		153.	240.	247.	247.
THOUS CU M		189.	296.	305.	305.

0.6PMF

MAXIMUM STORAGE = 2.

MAXIMUM STAGE IS 1119.8

HYDROGRAPH ROUTING

ROUTE FROM SECTION 2 TO SECTION 3 * 5000 FT DS FROM DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
203	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
0.0	0.000	0.00	1	1	0	0		0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1.	0

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM
BY WJV DATE 4-19-79 PROJ. NO. 79-617-496
CHKD. BY DLB DATE 4-20-79 SHEET NO. J OF T

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NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
.1250	.0350	.0700	1085.0	1120.0	3500.	.01000

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
0.00 1120.00 50.00 1100.00 100.00 1088.00 105.00 1085.00 120.00 1085.00
125.00 1088.00 250.00 1100.00 300.00 1120.00

STORAGE	0.00	2.67	6.47	13.63	24.78	39.89	58.99	82.06	109.10
	170.62	203.43	237.61	273.16	310.06	348.33	387.96	428.96	471.31
OUTFLOW	0.00	185.86	669.38	1554.82	2902.64	4795.60	7308.76	10512.35	14472.95
	25569.15	32271.14	39702.37	47855.86	56728.19	66318.55	76628.06	87659.32	99416.08
STAGE	1085.00	1086.84	1088.68	1090.53	1092.37	1094.21	1096.05	1097.89	1099.74
	1103.42	1105.26	1107.11	1108.95	1110.79	1112.63	1114.47	1116.32	1118.16
FLOW	0.00	185.86	669.38	1554.82	2902.64	4795.60	7308.76	10512.35	14472.95
	25569.15	32271.14	39702.37	47855.86	56728.19	66318.55	76628.06	87659.32	99416.08

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	926.	553.	200.	103.	29720.
CMS	26.	16.	6.	3.	842.
INCHES		15.12	21.91	22.59	22.59
MM		384.15	556.43	573.71	573.71
AC-FT		274.	397.	409.	409.
THOUS CU M		338.	490.	505.	505.

PMF

SECTION
@
?? STRUCTURE

MAXIMUM STORAGE = 9.

MAXIMUM STAGE IS 1089.2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	387.	309.	120.	62.	17792.
CMS	11.	9.	3.	2.	504.
INCHES		8.45	13.11	13.52	13.52
MM		214.63	333.08	343.45	343.45
AC-FT		153.	238.	245.	245.
THOUS CU M		189.	293.	302.	302.

0.6 PMF

RAILROAD
BUILDING
≈ @
EL. 10[illegible]

MAXIMUM STORAGE = 4.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. K OF T

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HYDROGRAPH ROUTING

ROUTE FROM SECTION 3 TO SECTION 4 (BRDG EMBANKMENT) * 6600 FT DS FROM DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
304	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1.	0

STORAGE	0.00	2.80	4.70	6.20	7.80	23.90	31.60	36.20	40.00
	46.80	50.20	53.70	58.90	65.30				
OUTFLOW	0.00	200.00	400.00	600.00	800.00	1000.00	2000.00	3000.00	4000.00
	6000.00	7000.00	8000.00	9000.00	10000.00				

SECTION @
2ND STRUCTURE
@ BRIDGE
EMBANKMENT

HOUSE ≈ @
EL. 1080.0

PMF
CORRESPONDING
TO ≈ EL. 1075.6
(SEE SHEET E)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	860.	553.	199.	103.	29543.
CMS	24.	16.	6.	3.	837.
INCHES		15.12	21.78	22.45	22.45
MM		383.97	553.09	570.29	570.29
AC-FT		274.	395.	407.	407.
THOUS CU M		338.	487.	502.	502.

MAXIMUM STORAGE = 13.

0.6 PMF
CORRESPONDING
TO ≈ EL. 1070.6
(SEE SHEET E)

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	387.	309.	119.	61.	17649.
CMS	11.	9.	3.	2.	500.
INCHES		8.44	13.01	13.41	13.41
MM		214.45	330.37	340.70	340.70
AC-FT		153.	236.	243.	243.
THOUS CU M		189.	291.	300.	300.

MAXIMUM STORAGE = 5.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. L OF T

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SUMMARY OF DAM SAFETY ANALYSIS

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1168.00	1168.00	1171.00
STORAGE	230.	230.	301.
OUTFLOW	0.	0.	390.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.20	1168.76	0.00	247.	141.	0.00	42.17	0.00
.30	1169.36	0.00	261.	188.	0.00	42.50	0.00
.40	1169.93	0.00	275.	252.	0.00	42.50	0.00
.50	1170.47	0.00	288.	316.	0.00	42.50	0.00
1.00	1171.46	.46	313.	931.	3.50	41.17	0.00
.60	1170.99	0.00	301.	388.	0.00	42.50	0.00

PLAN 1 STATION 102

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.20	141.	1118.6	42.33
.30	188.	1118.9	42.67
.40	252.	1119.3	42.67
.50	316.	1119.6	42.67
1.00	931.	1121.1	41.17
.60	388.	1119.8	42.67

PLAN 1 STATION 203

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.20	140.	1086.4	42.50
.30	188.	1086.9	42.67
.40	252.	1087.1	42.67
.50	316.	1087.3	42.67
1.00	926.	1089.2	41.33
.60	387.	1087.6	42.67

PLAN 1 STATION 304

RATIO	MAXIMUM FLOW, CFS	MAXIMUM STAGE, FT *
.20	140.	1066.6
.30	189.	1067.6
.40	251.	1068.4
.50	316.	1069.1
1.00	860.	1075.6
.60	387.	1070.0

* FROM SHEET E

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. M OF T

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BREACHING

(SAME INPUT DATA AS FOR THE OVERTOPPING ANALYSIS W/ THE ADDITION OF THE BREACH DATA GIVEN BELOW)

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DAM SAFETY INSPECTION
JEANNETTE DAM ******** BREACHING ANALYSIS   ********
10-MINUTE TIME STEP AND 48-HOUR STORM DURATION

                          JOB SPECIFICATION
 NQ     NHR    NMIN    IDAY     IHR    IMIN   METRC    IPLT    IPRT   NSTAN
 288      0      10       0       0       0       0       0       0       0
                      JOPER     NWT   LROPT   TRACE
                          5       0       0       0

                  MULTI-PLAN ANALYSES TO BE PERFORMED
                       NPLAN= 4 NRTIO= 1 LRTIO= 1
  RTIOS=     .50


                          HYDROGRAPH ROUTING

ROUTE THROUGH RESERVOIR

                                                   DAM DATA
                                         TOPEL     COQD     EXPD   DAMWID
                                        1171.0      0.0      0.0       0.

                                                  DAM BREACH DATA
                                 BRWID       Z     ELBM    TFAIL     WSEL   FAILEL
                                    0.     .50  1139.00      .50  1168.00  1170.40

                                       STATION     101, PLAN 1, RATIO 1

 BEGIN DAM FAILURE AT 42.00 HOURS


THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF  .010 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF   .167 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.
```

PLAN 1

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 78-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. N OF T

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	TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	-	COMPUTED BREACH HYDROGRAPH (CFS)		=	ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
	42.000	0.000	309.		309.			0.	0.	0.
	42.010	.010	332.		310.			23.	23.	0.
	42.020	.020	355.		310.			45.	67.	0.
	42.029	.029	378.		312.			65.	132.	0.
	42.039	.039	400.		317.			84.	216.	0.
	42.049	.049	423.		323.			100.	316.	0.
	42.059	.059	446.		333.			113.	430.	0.
	42.069	.069	469.		345.			123.	553.	0.
	42.078	.078	492.		362.			130.	683.	1.
	42.088	.088	514.		381.			133.	816.	1.
	42.098	.098	537.		405.			132.	948.	1.
	42.108	.108	560.		433.			127.	1075.	1.
	42.118	.118	583.		465.			117.	1192.	1.
	42.127	.127	605.		502.			103.	1295.	1.
	42.137	.137	628.		543.			85.	1380.	1.
	42.147	.147	651.		590.			62.	1442.	1.
	42.157	.157	674.		641.			33.	1475.	1.
	42.167	.167	697.		697.			-0.	1475.	1.
	42.176	.176	799.		758.			42.	1517.	1.
	42.186	.186	902.		824.			78.	1595.	1.
	42.196	.196	1005.		895.			109.	1704.	1.
	42.206	.206	1107.		972.			135.	1839.	1.
1	42.216	.216	1210.		1054.			156.	1995.	2.
	42.225	.225	1313.		1142.			171.	2166.	2.
	42.235	.235	1415.		1234.			181.	2347.	2.
	42.245	.245	1518.		1332.			186.	2532.	2.
	42.255	.255	1621.		1435.			185.	2718.	2.
	42.265	.265	1723.		1544.			179.	2897.	2.
	42.275	.275	1826.		1658.			169.	3066.	2.
	42.284	.284	1929.		1776.			152.	3218.	3.
	42.294	.294	2031.		1900.			131.	3349.	3.
	42.304	.304	2134.		2029.			106.	3455.	3.
	42.314	.314	2237.		2162.			75.	3530.	3.
	42.324	.324	2339.		2300.			40.	3570.	3.
	42.333	.333	2442.		2442.			-0.	3570.	3.
	42.343	.343	2613.		2589.			24.	3594.	3.
	42.353	.353	2784.		2740.			44.	3637.	3.
	42.363	.363	2955.		2896.			59.	3697.	3.
	42.373	.373	3126.		3057.			69.	3765.	3.
	42.382	.382	3296.		3224.			73.	3838.	3.
	42.392	.392	3467.		3394.			73.	3911.	3.
	42.402	.402	3638.		3569.			70.	3980.	3.
	42.412	.412	3809.		3746.			63.	4043.	3.
	42.422	.422	3980.		3924.			56.	4099.	3.
	42.431	.431	4151.		4103.			48.	4147.	3.
	42.441	.441	4322.		4284.			38.	4185.	3.
	42.451	.451	4493.		4466.			27.	4212.	3.
	42.461	.461	4664.		4627.			37.	4249.	3.
	42.471	.471	4834.		4789.			45.	4294.	3.
	42.480	.480	5005.		4953.			53.	4347.	4.
	42.490	.490	5176.		5149.			28.	4374.	4.
	42.500	.500	5347.	PEAK	5347.	PEAK		-0.	4374.	4.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. O OF T

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PLAN
2

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
150.	4.00	1139.00	.50	1158.00	1170.40

STATION 101, PLAN 2, RATIO 1

BEGIN DAM FAILURE AT 42.00 HOURS

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF .010 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF .167 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	-	COMPUTED BREACH HYDROGRAPH (CFS)	=	ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
42.000	0.000	310.		310.		0.	0.	0.
42.010	.010	918.		314.		604.	604.	0.
42.020	.020	1525.		565.		960.	1564.	1.
42.029	.029	2133.		996.		1137.	2701.	2.
42.039	.039	2740.		1542.		1198.	3899.	3.
42.049	.049	3348.		2171.		1176.	5076.	4.
42.059	.059	3955.		2863.		1093.	6168.	5.
42.069	.069	4563.		3599.		964.	7133.	6.
42.078	.078	5170.		4364.		806.	7939.	6.
42.088	.088	5778.		5143.		635.	8574.	7.
42.098	.098	6385.		5925.		460.	9034.	7.
42.108	.108	6993.		6703.		290.	9324.	8.
42.118	.118	7600.		7476.		125.	9449.	8.
42.127	.127	8208.		8231.		-23.	9426.	8.
42.137	.137	8816.		8918.		-102.	9324.	8.
42.147	.147	9423.		9551.		-128.	9195.	7.
42.157	.157	10031.		10111.		-80.	9115.	7.
42.167	.167	10638. PEAK		10638.		-0.	9115.	7.
42.176	.176	10611.		11128.		-517.	8598.	7.
42.186	.186	10585.		11582.		-997.	7601.	6.
42.196	.196	10558.		11999.		-1441.	6160.	5.
42.206	.206	10531.		12312.		-1781.	4379.	4.
42.216	.216	10504.		12362.		-1858.	2521.	2.
2 42.225	.225	10478.		12406.		-1929.	592.	0.
42.235	.235	10451.		12445.		-1994.	-1402.	-1.
42.245	.245	10424.		12479.		-2055.	-3457.	-3.
42.255	.255	10397.		12509.		-2111.	-5568.	-5.
42.265	.265	10371.		12535.		-2164.	-7732.	-6.
42.275	.275	10344.		12558. PEAK		-2214.	-9946.	-8.
42.284	.284	10317.		12515.		-2198.	-12143.	-10.
42.294	.294	10290.		11841.		-1551.	-13694.	-11.
42.304	.304	10264.		11296.		-1032.	-14726.	-12.
42.314	.314	10237.		10851.		-614.	-15340.	-12.
42.324	.324	10210.		10485.		-275.	-15615.	-13.
42.333	.333	10183.		10183.		0.	-15615.	-13.
42.343	.343	9655.		9933.		-279.	-15894.	-13.
42.353	.353	9126.		8926.		200.	-15693.	-13.
42.363	.363	8597.		8086.		511.	-15182.	-12.
42.373	.373	8069.		7466.		603.	-14580.	-12.
42.382	.382	7540.		7000.		540.	-14[illegible]	-11.
42.392	.392	7011.		6645.		367.	-13673.	-11.
42.402	.402	6483.		5836.		647.	-13027.	-11.
42.412	.412	5954.		4806.		1148.	-11878.	-10.
42.422	.422	5425.		4176.		1250.	-10628.	-9.
42.431	.431	4897.		3772.		1125.	-9504.	-8.
42.441	.441	4368.		3506.		862.	-8642.	-7.
42.451	.451	3839.		2805.		1034.	-7607.	-6.
42.461	.461	3311.		1891.		1420.	-6187.	-5.
42.471	.471	2782.		1550.		1232.	-4955.	-4.
42.480	.480	2253.		1403.		850.	-4105.	-3.
42.490	.490	1725.		1334.		390.	-3715.	-3.
42.500	.500	1196.		1196.		0	-3715.	-3.

SUBJECT DAM SAFETY INSPECTION

JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. P OF T

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PLAN 3

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
75.	2.00	1139.00	.50	1168.00	1170.40

STATION 101, PLAN 3, RATIO 1

BEGIN DAM FAILURE AT 42.00 HOURS

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF .010 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF .167 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	-	COMPUTED BREACH HYDROGRAPH (CFS)	=	ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
42.000	0.000	310.		310.		0.	0.	0.
42.010	.010	704.		312.		392.	392.	0.
42.020	.020	1098.		438.		660.	1052.	1.
42.029	.029	1492.		657.		835.	1888.	2.
42.039	.039	1886.		939.		948.	2835.	2.
42.049	.049	2281.		1270.		1010.	3845.	3.
42.059	.059	2675.		1643.		1032.	4877.	4.
42.069	.069	3069.		2051.		1018.	5895.	5.
42.078	.078	3463.		2487.		976.	6871.	6.
42.088	.088	3857.		2948.		909.	7781.	6.
42.098	.098	4252.		3428.		824.	8604.	7.
42.108	.108	4646.		3922.		723.	9327.	8.
42.118	.118	5040.		4427.		613.	9941.	8.
42.127	.127	5434.		4938.		496.	10437.	8.
42.137	.137	5828.		5454.		374.	10811.	9.
42.147	.147	6222.		5978.		244.	11055.	9.
42.157	.157	6617.		6501.		116.	11171.	9.
42.167	.167	7011.		7011.		-0.	11171.	9.
42.176	.176	7285.		7495.		-210.	10961.	9.
42.186	.186	7560.		7953.		-393.	10567.	9.
42.196	.196	7834.		8372.		-538.	10029.	8.
3 42.206	.206	8108.		8796.		-688.	9342.	8.
42.216	.216	8383.		9215.		-832.	8510.	7.
42.225	.225	8657.		9617.		-960.	7550.	6.
42.235	.235	8932.		10002.		-1071.	6480.	5.
42.245	.245	9206.		10370.		-1164.	5316.	4.
42.255	.255	9481.		10678.		-1198.	4118.	3.
42.265	.265	9755.		10840.		-1085.	3033.	2.
42.275	.275	10030.		10989.		-960.	2074.	2.
42.284	.284	10304.		11128.		-824.	1250.	1.
42.294	.294	10578.		11256.		-677.	573.	0.
42.304	.304	10853.		11374.		-521.	52.	0.
42.314	.314	11127.		11483.		-356.	-304.	-0.
42.324	.324	11402.		11584.		-182.	-486.	-0.
42.333	.333	11676. PEAK		11676. PEAK		0.	-486.	-0.
42.343	.343	11159.		11665.		-506.	-992.	-1.
42.353	.353	10643.		11304.		-661.	-1653.	-1.
42.363	.363	10126.		10989.		-864.	-2517.	-2.
42.373	.373	9609.		10715.		-1106.	-3623.	-3.
42.382	.382	9092.		10475.		-1383.	-5005.	-4.
42.392	.392	8575.		10264.		-1689.	-6694.	-5.
42.402	.402	8058.		10079.		-2020.	-8714.	-7.
42.412	.412	7542.		9324.		-1783.	-10497.	-9.
42.422	.422	7025.		8651.		-1626.	-12123.	-10.
42.431	.431	6508.		8108.		-1600.	-13723.	-11.
42.441	.441	5991.		7666.		-1675.	-15398.	-12.
42.451	.451	5474.		7303.		-1828.	-17226.	-14.
42.461	.461	4958.		6152.		-1195.	-18421.	-15.
42.471	.471	4441.		5317.		-876.	-19297.	-16.
42.480	.480	3924.		4727.		-803.	-20100.	-16.
42.490	.490	3407.		4299.		-892.	-20991.	-17.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. Q OF T

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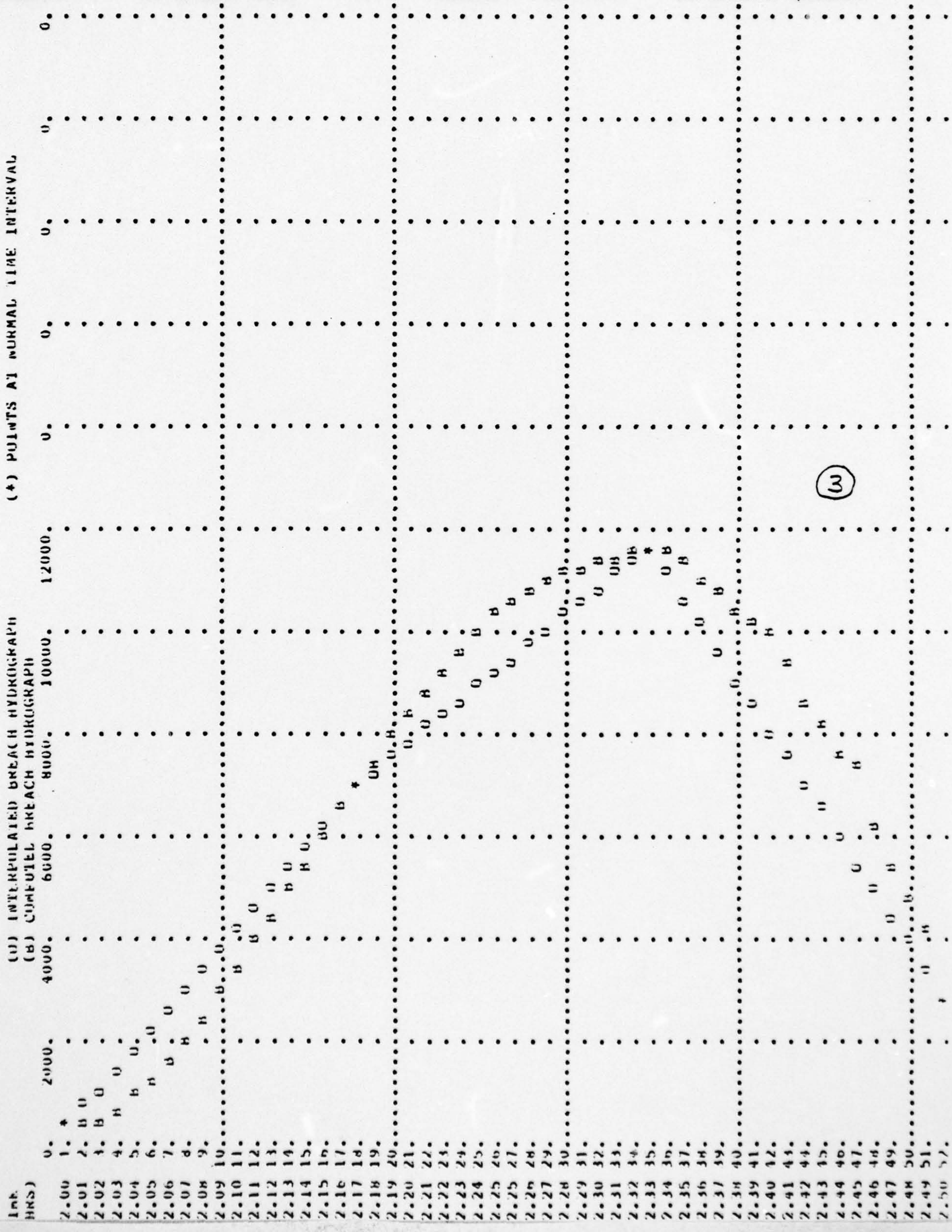

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. R OF T

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PLAN 4

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
75.	2.00	1139.00	1.00	1168.00	1170.40

STATION 101, PLAN 4, RATIO 1

BEGIN DAM FAILURE AT 42.00 HOURS

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF .021 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF .167 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	-	COMPUTED BREACH HYDROGRAPH (CFS)	=	ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
42.000	0.000	310.		310.		0.	0.	0.
42.021	.021	586.		316.		270.	270.	0.
42.042	.042	862.		462.		400.	671.	1.
42.063	.063	1138.		702.		436.	1107.	2.
42.083	.083	1415.		1003.		412.	1519.	3.
42.104	.104	1691.		1346.		345.	1864.	3.
42.125	.125	1967.		1719.		248.	2112.	4.
42.146	.146	2243.		2113.		130.	2241.	4.
42.167	.167	2519.		2519.		-0.	2241.	4.
42.188	.188	2878.		2927.		-50.	2192.	4.
42.208	.208	3236.		3334.		-98.	2094.	4.
42.229	.229	3595.		3739.		-144.	1950.	3.
42.250	.250	3953.		4138.		-185.	1765.	3.
42.271	.271	4311.		4509.		-198.	1567.	3.
42.292	.292	4670.		4848.		-178.	1389.	2.
42.313	.313	5028.		5113.		-85.	1304.	2.
42.333	.333	5387.		5387.		0.	1304.	2.
42.354	.354	5512.		5657.		-145.	1159.	2.
42.375	.375	5637.		5906.		-269.	890.	2.
42.396	.396	5762.		6133.		-371.	519.	1.
42.417	.417	5887.		6293.		-406.	113.	0.
42.438	.437	6012.		6322.		-310.	-197.	-0.
42.458	.458	6137.		6347.		-210.	-407.	-1.
42.479	.479	6262.		6369.		-106.	-513.	-1.
42.500	.500	6387.		6387.		0.	-513.	-1.
42.521	.521	6245.		6403.		-158.	-671.	-1.
42.542	.542	6103.		6417.		-313.	-985.	-2.
42.563	.562	5961.		6428.		-467.	-1452.	-2.
42.583	.583	5819.		6204.		-385.	-1837.	-3.
42.604	.604	5677.		5884.		-208.	-2044.	-4.
42.625	.625	5535.		5628.		-93.	-2137.	-4.
42.646	.646	5393.		5420.		-27.	-2164.	-4.
42.667	.667	5251.		5251.		0.	-2164.	-4.
42.688	.687	4894.		5112.		-219.	-2383.	-4.
42.708	.708	4536.		4622.		-86.	-2469.	-4.
42.729	.729	4179.		4166.		13.	-2456.	-4.
42.750	.750	3821.		3836.		-14.	-2470.	-4.
42.771	.771	3464.		3592.		-128.	-2598.	-4.
42.792	.792	3107.		3409.		-302.	-2900.	-5.
42.813	.812	2749.		2872.		-123.	-3023.	-5.
42.833	.833	2392.		2392.		0.	-3023.	-5.
42.854	.854	2186.		2104.		82.	-2940.	-5.
42.875	.875	1981.		1923.		58.	-2882.	-5.
42.896	.896	1775.		1805.		-30.	-2912.	-5.
42.917	.917	1569.		1164.		405.	-2507.	-4.
42.938	.937	1364.		908.		456.	-2051.	-4.
42.958	.958	1158.		809.		349.	-1702.	-3.
42.979	.979	952.		767.		186.	-1516.	-3.
43.000	1.000	746.		746.		0.	-1516.	-3.

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. S OF T

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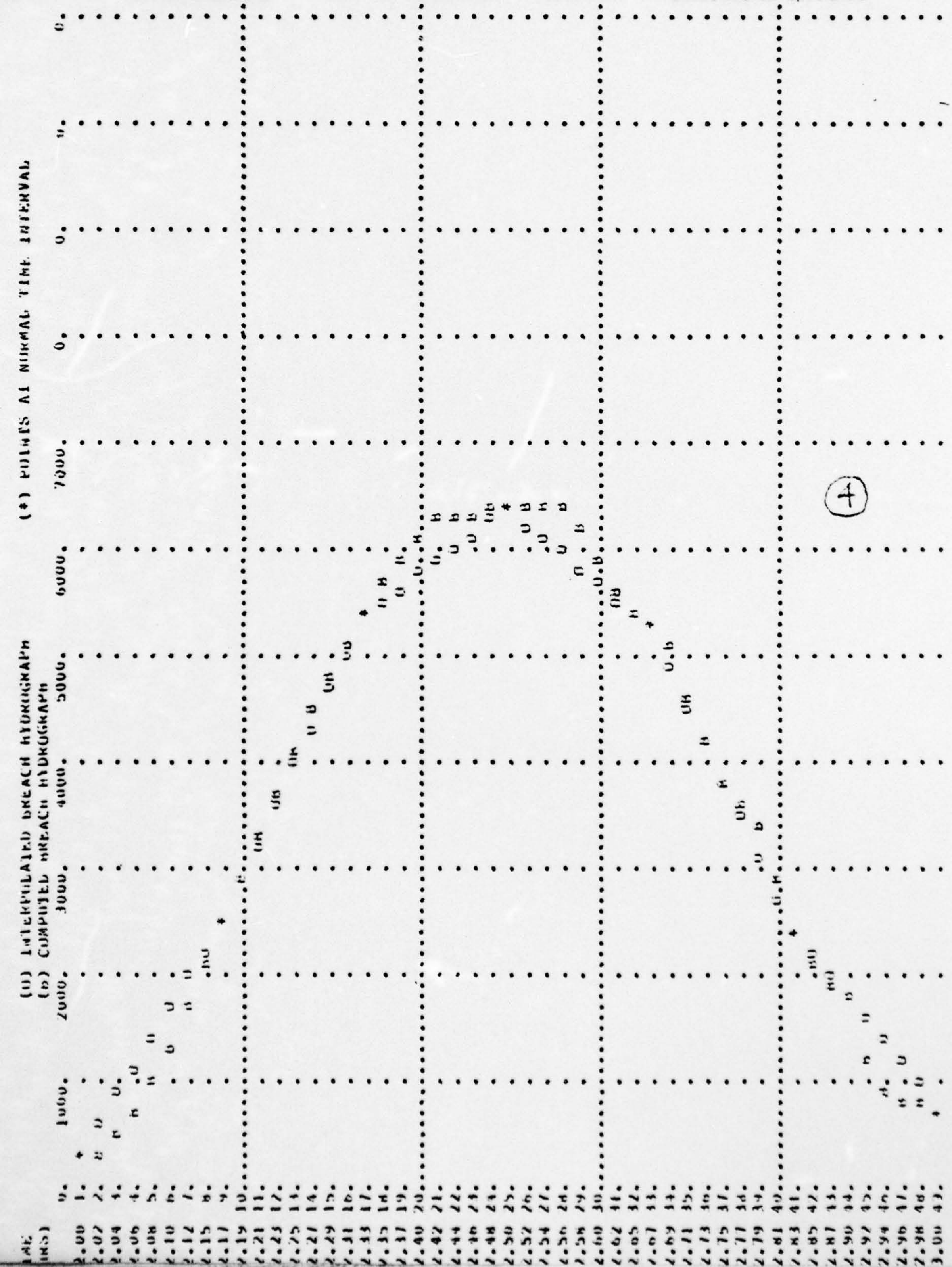

4

SUBJECT DAM SAFETY INSPECTION
JEANNETTE DAM

BY WJV DATE 4-19-79 PROJ. NO. 79-617-496

CHKD. BY DLB DATE 4-20-79 SHEET NO. T OF T

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DOWNSTREAM CHANNEL ROUTING

SECTION 3 (203) @ 1ST STRUCTURE: RR BLDG

PLAN	FLOW (CFS)*	ELEVATION (FT)**
1	4391	1093.8
2	8679	1096.8
3	8491	1096.7
4	5938	1095.0

SECTION 4 (304) @ BRDG. CROSSING AND 2ND STRUCTURE

PLAN	FLOW (CFS)*	ELEVATION (FT)**
1	4327	1083.3
2	8732	1085.2
3	8871	1085.3
4	6059	1084.0

* FLOWS WERE OBTAINED FROM THE DETAILED HEC-1 OUTPUT

** ELEVATIONS WERE INTERPOLATED FROM RATING CURVE ON SHEET E

LIST OF REFERENCES

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2. "Unit Hydrograph Concepts and Calculations," by Corps of Engineers, Baltimore District (L-519).

3. "Seasonal Variation of Probable Maximum Precipitation East of the 105th Meridian for Areas from 10 to 1,000 Square Miles and Duration of 6, 12, 24, and 48 Hours," Hydrometeorological Report No. 33, prepared by J. T. Riedel, J. F. Appleby and R. W. Schloemer Hydrologic Service Division Hydrometeorological Section, U. S. Department of the Army, Corps of Engineers, Washington, D. C., April 1956.

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APPENDIX D

PHOTOGRAPHS

PHOTOGRAPH 1 View of Jeannette Dam from the right abutment.

PHOTOGRAPH 2 View of reservoir (Mountain Valley Lake) from the embankment crest.

PHOTOGRAPH 3 View from crest of dam looking downstream.

PHOTOGRAPH 4 View of the emergency spillway structure and diversion channel located along the west shore of the lake approximately 35 feet from the embankment crest.


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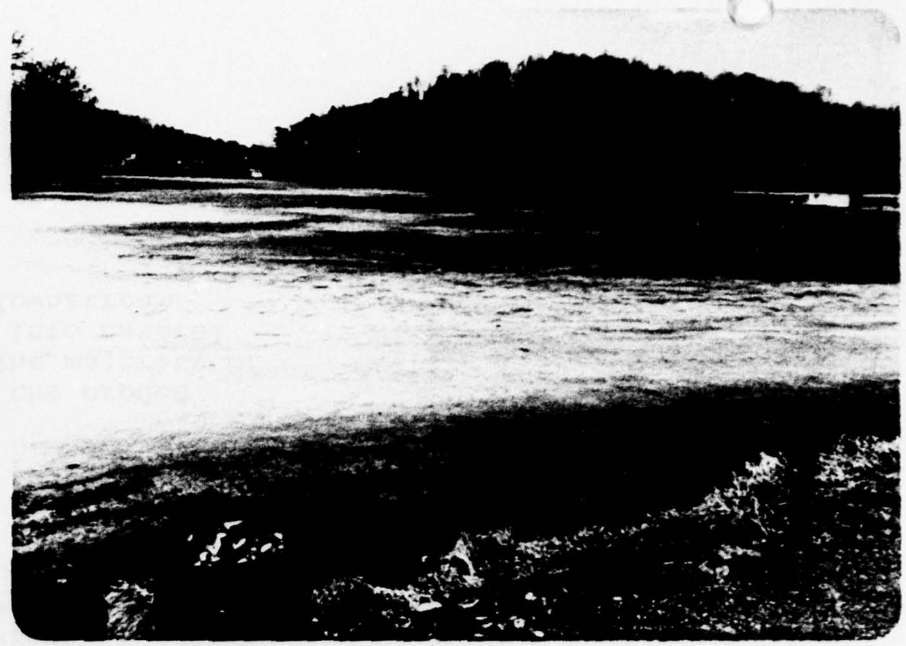
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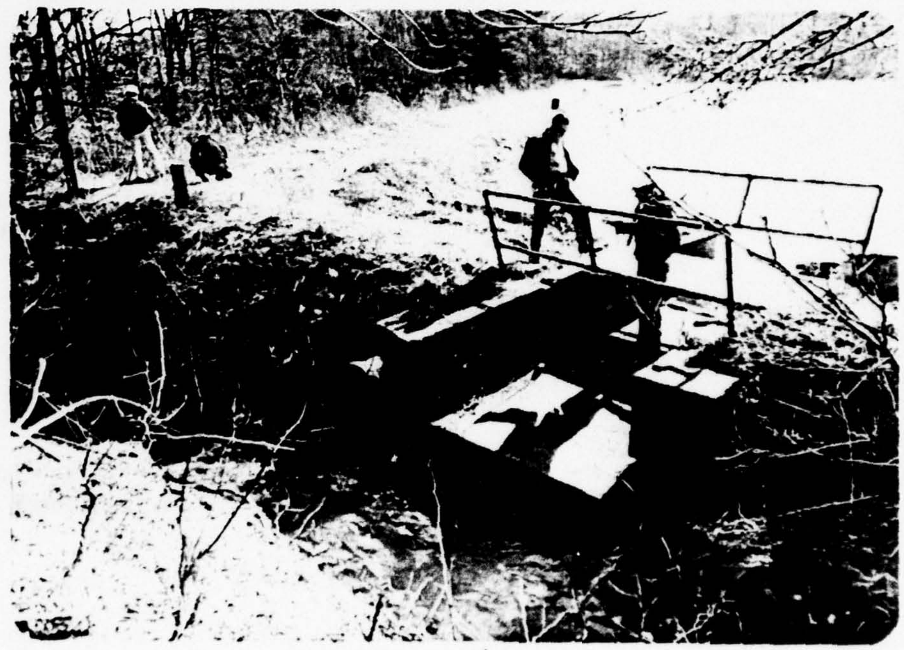
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PHOTOGRAPH 5 View of the diversion channel immediately downstream of the emergency spillway.

PHOTOGRAPH 6 Photo taken in 1915 showing the overflow weir on the drop-inlet spillway structure.

PHOTOGRAPH 7 View displaying the present extent of erosion around the drop-inlet spillway structure.

PHOTOGRAPH 8 View looking downstream along the eroded spillway discharge channel. The majority of the channel appears to be cut into natural ground immediately below the downstream embankment toe.

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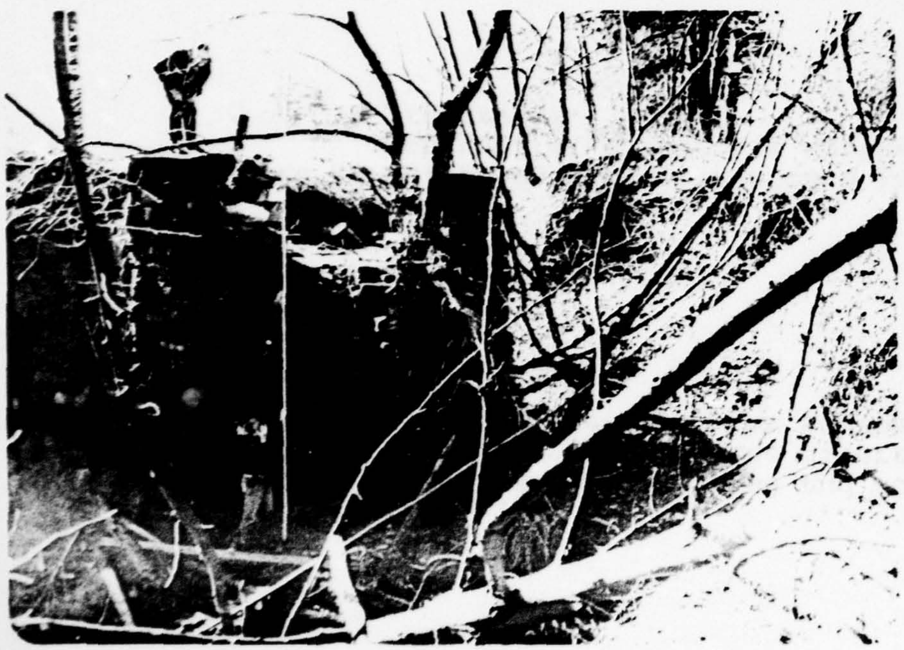

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PHOTOGRAPH 9 View of a fallen tree and downed utility lines obstructing the diversion channel several hundred feet from the southern edge of the lake.

PHOTOGRAPH 10 Close-up view of a breach in the diversion channel dike near the southwest corner of the reservoir.

PHOTOGRAPH 11 View of the outlet of the concrete culvert passing beneath U. S. Route 30 just upstream of the reservoir.

PHOTOGRAPH 12 View of a large hole located along the downstream face of the embankment approximately 150 feet to the right of the drop-inlet spillway.


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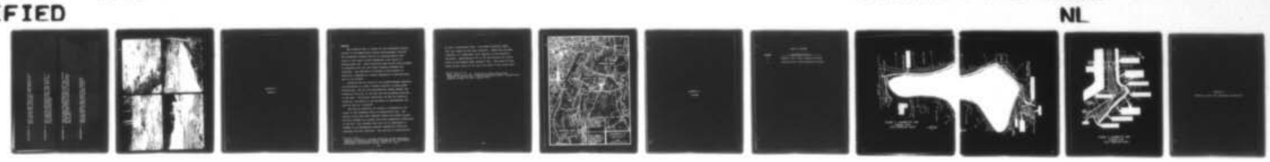

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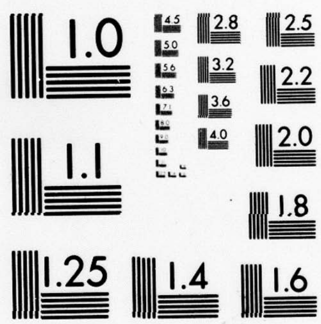
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6.3

PHOTOGRAPH 13 View of the embankment from approximately 150 feet downstream. Note the large opening in the roof of the gate house.

PHOTOGRAPH 14 View looking downstream from about 30 feet to the right of the valve house. The rule in the foregound indicates a moderate flow from a partially buried pipe.

PHOTOGRAPH 15 View of the first downstream structure located approximately 1-mile from the dam. The stream flows parallel to the railroad tracks and to the left of the building (stream near tree line).

PHOTOGRAPH 16 View of culvert that restricts downstream flow and several dwellings that could be affected by a failure of Jeannette Dam.


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APPENDIX E

GEOLOGY

Geology

The Jeannette Dam is located in the Pittsburgh Plateaus Section of the Appalachian Plateaus Physiographic Province. The Pittsburgh Plateaus Section is characterized by flat lying to very gently folded sedimentary rock strata of Pennsylvanian age. Major structural axes strike from southwest to northeast with the rock strata dipping northwest and southeast. The amplitude of folding in this section is quite low, consequently, surface expression of the anticlinal axes is not evident.

Jeannette Dam and reservoir are located between Jeannette and Greensburg on a small unnamed tributary of Brush Creek. Structurally, the dam lies approximately midway between the Grapeville anticline to the west and the Greensburg syncline to the east. Rock strata underlying the dam and reservoir, therefore, dip gently to the southeast at approximately 400 feet per mile or 4 degrees[1].

The dam and reservoir are located on sedimentary rock strata of the Conemaugh group of Pennsylvanian age. The outcrop of the thin Ames limestone marker bed passes through the left abutment and crosses the valley immediately downstream of the dam. This suggests that most of the embankment is founded on the sedimentary sequence immediately above and including the Ames limestone. This section is characterized

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[1] Johnson, Meredith E. "Mineral Resources of the Greensburg Quadrangle, Westmoreland County, Pennsylvania," Harrisburg: Topographic and Geologic Survey, Atlas, 37, 1925.

by gray, carbonaceous shale, thin-bedded sandstone seams, thin coal seams and the Ames limestone. Underlying the Ames limestone is a moderately thick sequence of red claystone and shale. Approximately 275 to 290 feet beneath the valley floor is the minable Upper Freeport Coal. This seam has been mined several miles to the north and south of the study area[2].

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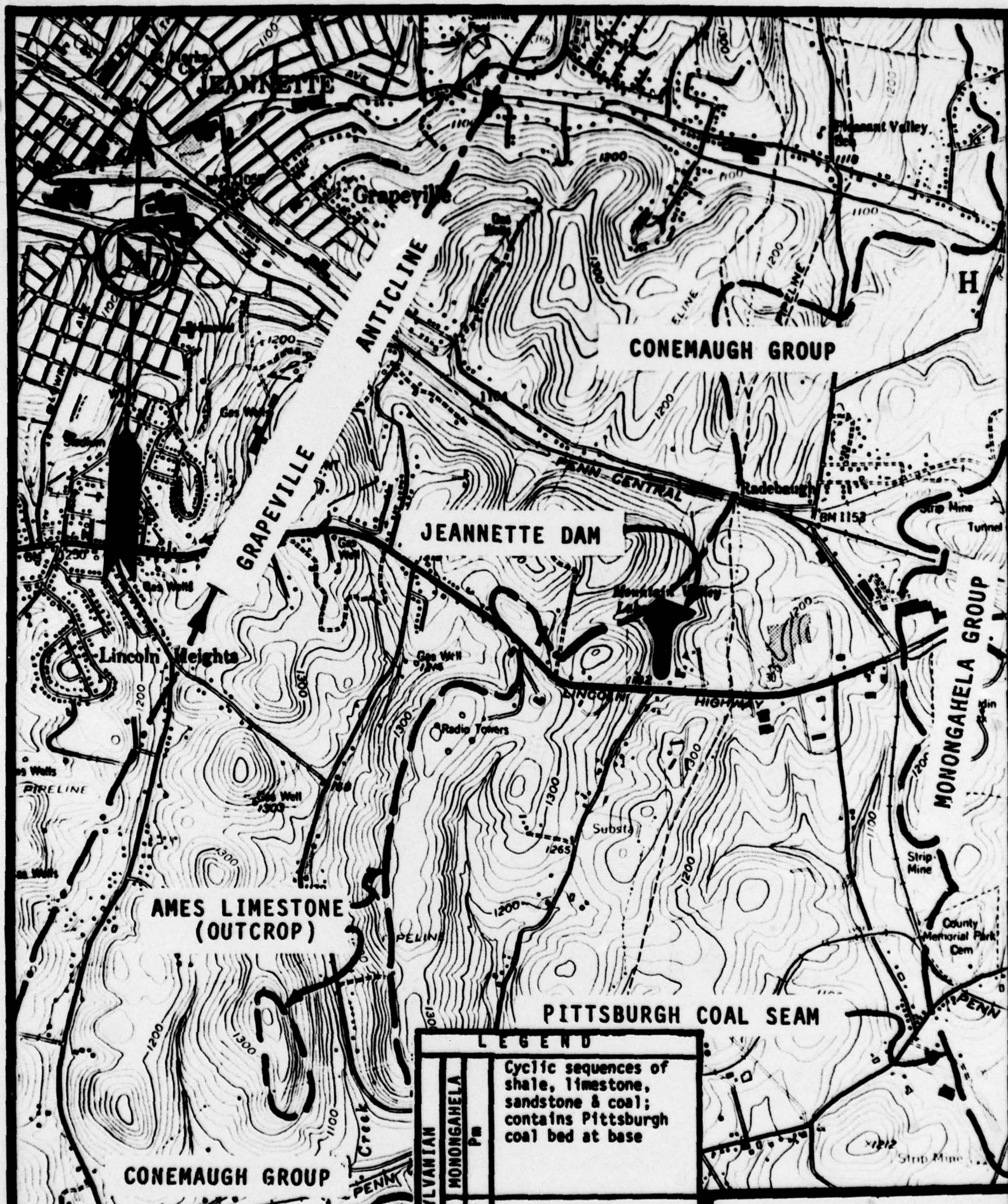
[2]Dowd, James J., et. al. "Estimate of Known Recoverable Reserves of Coking Coal in the Westmoreland County, Pennsylvania." Bureau of Mines, RI 4803, August, 1917.



JEANNETTE
Grapeville
GRAPEVILLE ANTICLINE
CONEMAUGH GROUP
JEANNETTE DAM
PENN CENTRAL
Radebaugh
Lincoln Heights
LINCOLN HIGHWAY
MONONGAHELA GROUP
Strip Mine
Tunnel
Radio Towers
Substa
AMES LIMESTONE (OUTCROP)
PITTSBURGH COAL SEAM
County Memorial Park Cem
CONEMAUGH GROUP
Sewickley Creek
LEGEND
PENNSYLVANIAN
MONONGAHELA
Pm
Cyclic sequences of shale, limestone, sandstone & coal; contains Pittsburgh coal bed at base
CONEMAUGH
Pc
Cyclic sequences of shale, sandstone, red beds & thin lime-limestone & coal; Ames limestone bed about middle of formation
GREENSBURG, PA.
SE/4 GREENSBURG 15 QUADRANGLE
N4015--W7930/7.5
1954
PHOTOREVISED 1969
AMS 5064 I SE-SERIES V831

APPENDIX F

FIGURES

LIST OF FIGURES

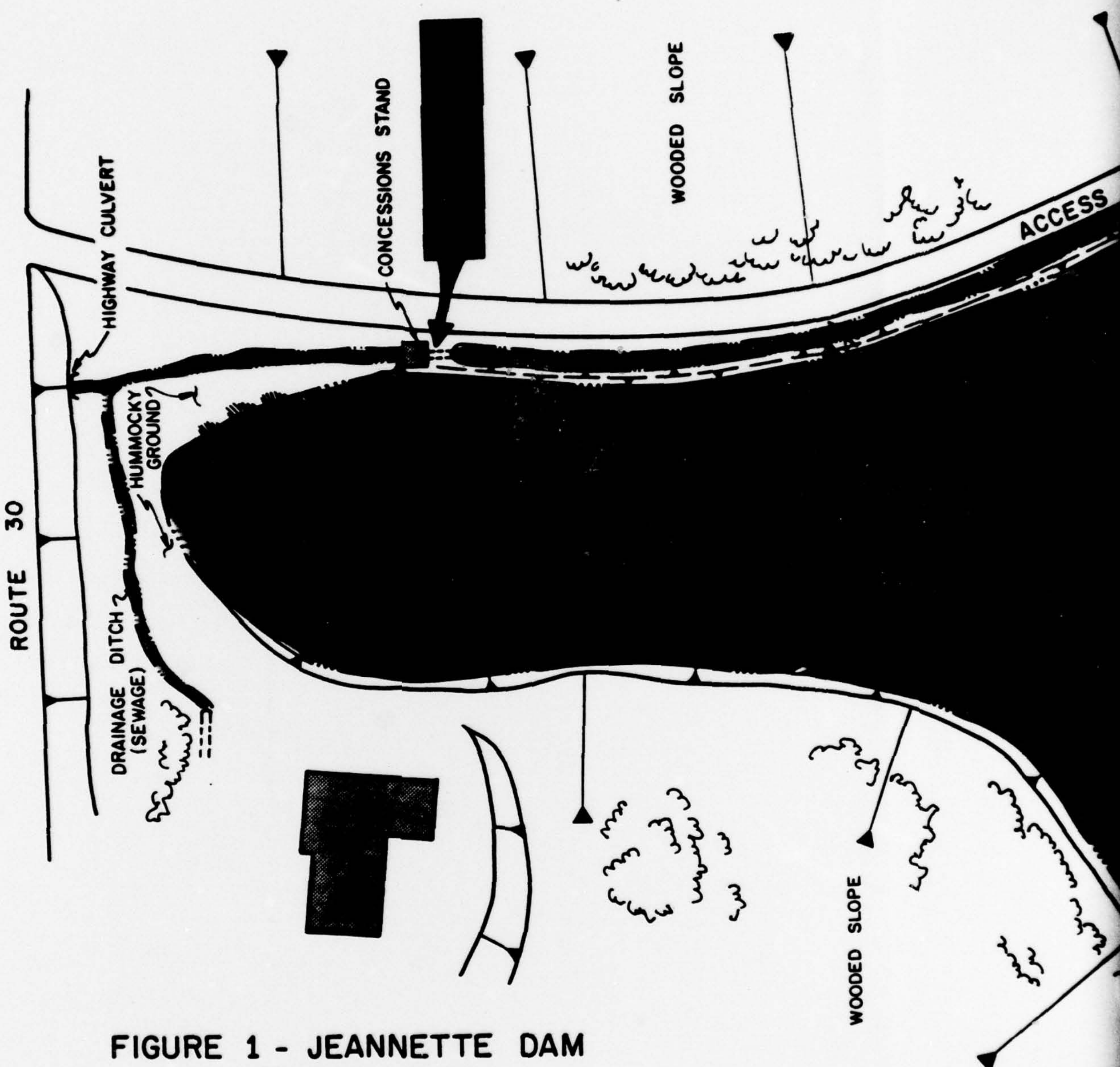
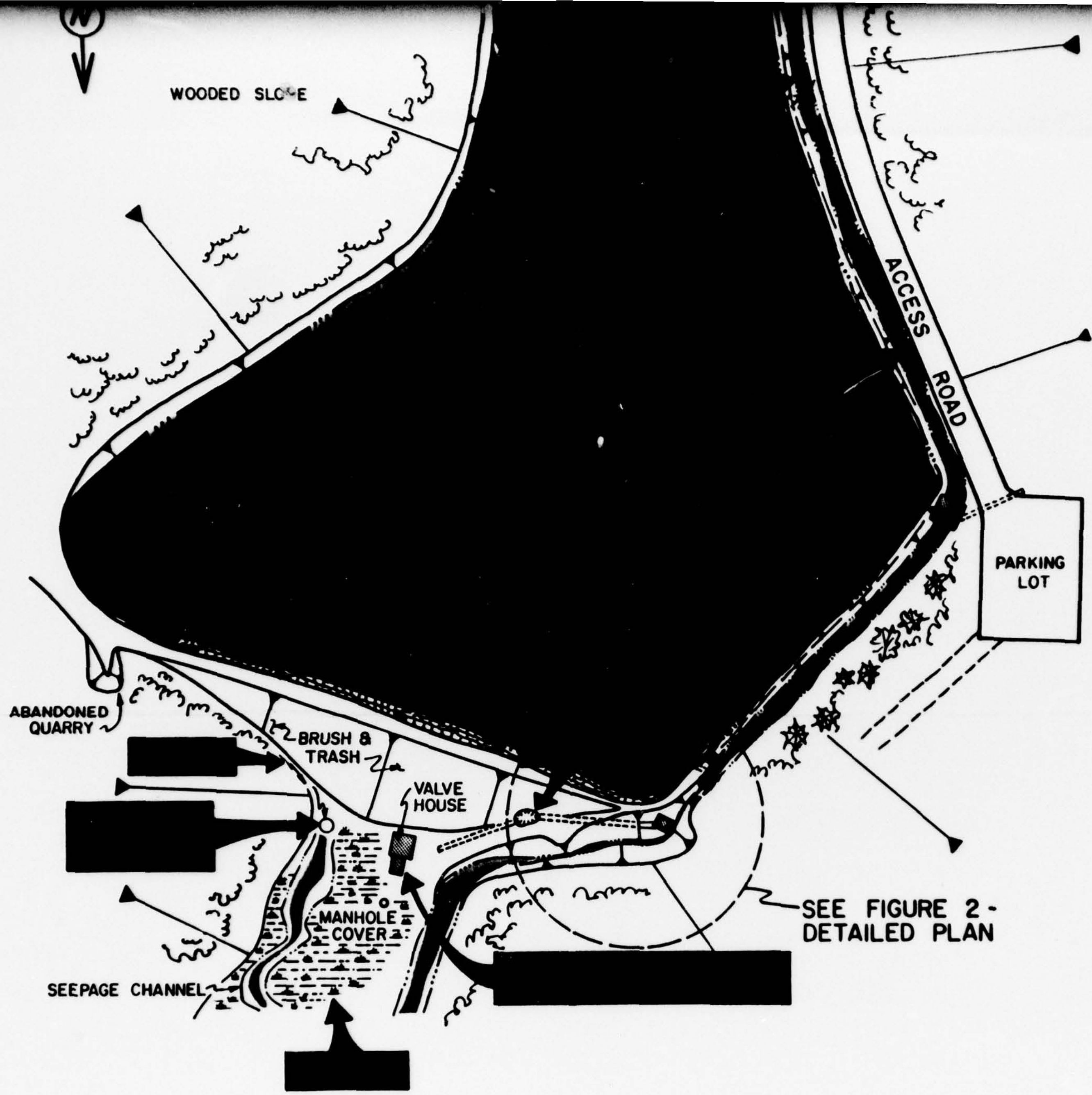


FIGURE 1 - JEANNETTE DAM
GENERAL PLAN
FIELD INSPECTION NOTES


WOODED SLOPE
ACCESS ROAD
PARKING LOT
ABANDONED QUARRY
BRUSH & TRASH
VALVE HOUSE
MANHOLE COVER
SEEPAGE CHANNEL
SEE FIGURE 2 - DETAILED PLAN

2

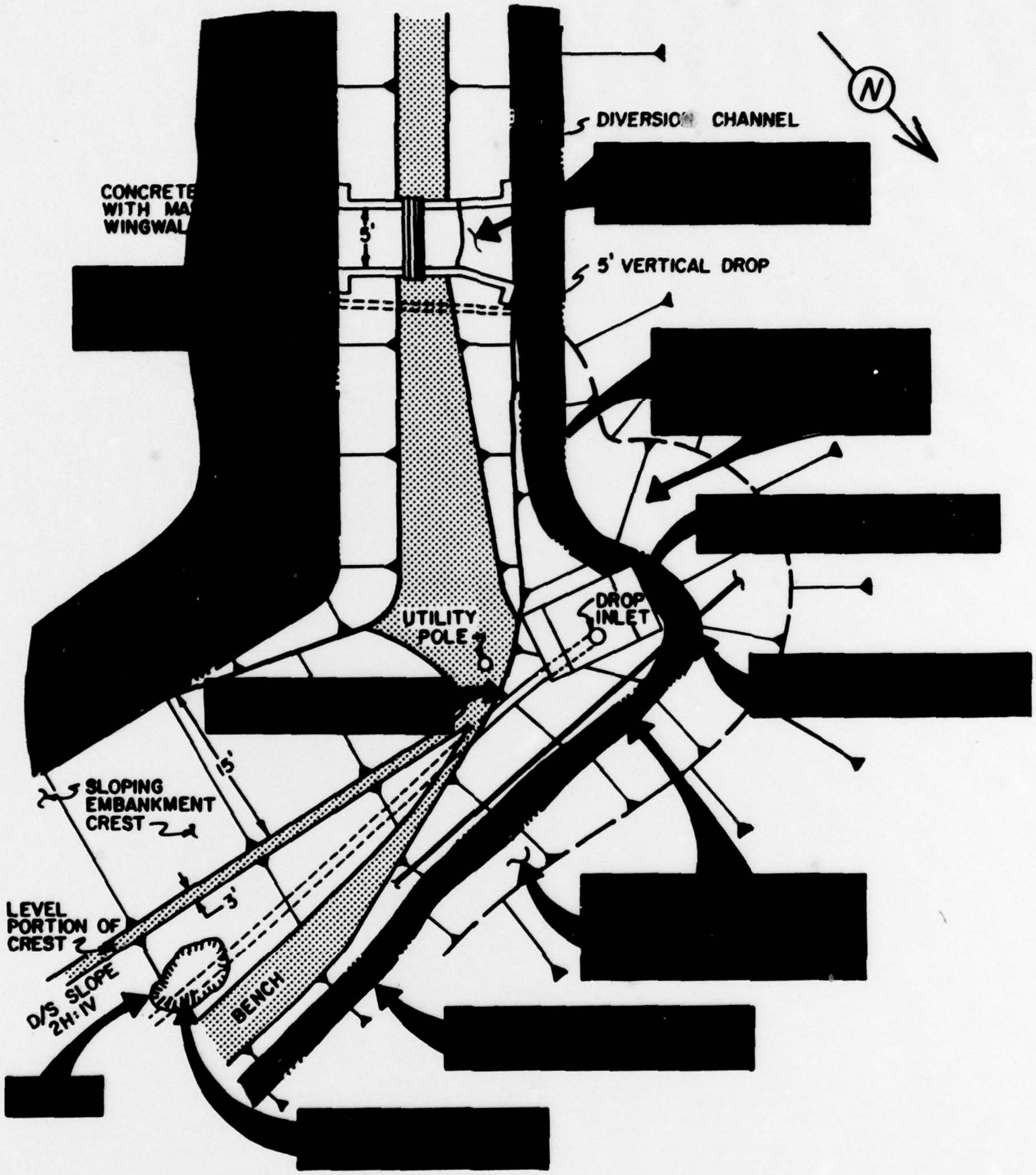
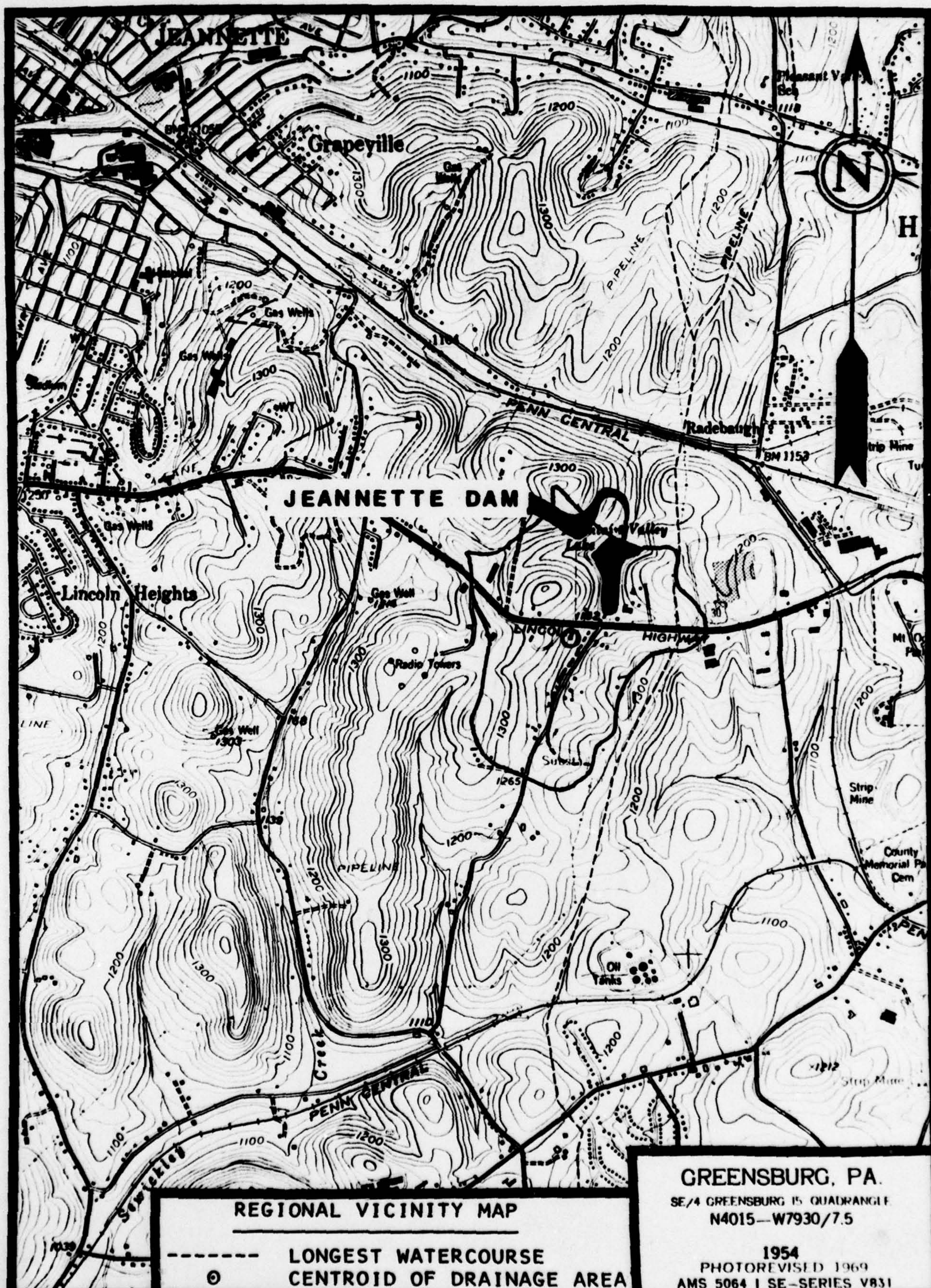


FIGURE 2 - JEANNETTE DAM
DETAILED PLAN
FIELD INSPECTION NOTES

APPENDIX G

REGIONAL VICINITY AND WATERSHED BOUNDARY MAP



REGIONAL VICINITY MAP

------- LONGEST WATERCOURSE

⊙ CENTROID OF DRAINAGE AREA

GREENSBURG, PA.

SE/4 GREENSBURG 15' QUADRANGLE

N4015—W7930/7.5

1954

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